REPORT RESUMES

ED 003 387 24

FIRST GRADE READING INSTRUCTION USING A DIACRITICAL MARKING SYSTEM, THE INITIAL TEACHING ALPHABET AND A BASAL READING SYSTEM.

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REPORT NUMBER CRP-2745 PUB DATE 65
EDRS PRICE MF-$0.18 HC-$3.88 97P.

DESCRIPTORS- *READING, *ACHIEVEMENT, *GRADE 1, PHONETICS, PHONICS, *BASIC READING, *DIACRITICAL MARKING, *ITA, ORTHOGRAPHIC SYMBOLS, NEW BRUNSWICK, NEW JERSEY

AN INVESTIGATION OF TWO INSTRUCTIONAL METHODS FOR BEGINNING READERS WHICH OFFER PHONETIC REGULARITY WAS CONDUCTED AND THE EFFECTIVENESS OF EACH WAS THEN COMPARED TO A MORE TRADITIONAL READING APPROACH. THREE METHODS STUDIED AND COMPARED WERE (1) THE INITIAL TEACHING ALPHABET (ITA), (2) THE DIACRITICAL MARKING SYSTEM (DMS), AND (3) A BASAL APPROACH WITH TRADITIONAL ORTHOGRAPHY (T.O.) OVER 20 FIRST-GRADE CLASSROOMS FROM 3 MIDDLE-CLASS, SUBURBAN SCHOOL DISTRICTS WERE SELECTED FOR STUDY. PARTICIPATING TEACHERS WERE VOLUNTEERS AND WERE ASSIGNED TO METHOD GROUPS BY LOT. CHILDREN RECEIVED CLASSROOM ASSIGNMENTS BY NORMAL PROCEDURES. PRE- AND POST-TESTS WERE SELECTED BY CONSULTANTS AND ADMINISTERED TO THE THREE METHOD GROUPS. PRETESTING OBTAINED MEASURES OF INTELLIGENCE AND READING READINESS. POST-TESTING WAS ACCOMPLISHED, PRIMARILY, THROUGH THE USE OF THE "STANFORD ACHIEVEMENT TEST" AND THE "GILMORE ORAL READING TEST." INSTRUCTION WAS CONDUCTED FOR 140 DAYS, USING EACH OF THE THREE METHODS IN SELECTED CLASSES. THE ITA GROUP USED THE "EARLY TO READ SERIES," THE TRADITIONAL ORTHOGRAPHY GROUP USED "SHELDON BASAL READERS," AND THE DMS GROUP USED SHELDON READERS PREPARED WITH DIACRITICAL MARKS. THE MAJOR STATISTICAL PROCEDURE WAS ANALYSIS OF VARIANCE BETWEEN GROUP MEANS, USING CLASSROOMS AS UNITS. RESULTS INDICATED (1) THERE WERE NO DIFFERENCES IN READING ACHIEVEMENT AT THE END OF 1 YEAR OF INSTRUCTION FOR ANY OF THE THREE METHODS, (2) NO METHOD WAS BETTER FOR BOYS THAN GIRLS, (3) NO METHOD WAS BETTER FOR YOUNGER FIRST-GRADERS THAN OLDER FIRST-GRADERS, (4) MEAN VARIATIONS BETWEEN CLASSROOMS WERE GREATER THAN THOSE BETWEEN METHODS, (5) THERE WERE NO SPELLING ABILITY DIFFERENCES (ITA PUPILS WERE ALLOWED TO SPELL IN ITA), (6) THE BEST PREDICTOR FOR READING ACHIEVEMENT WAS RAW SCORE ON THE PINTNER-CUNNINGHAM PRIMARY TEST, AND (7) READING READINESS MATERIALS ARE NOT NECESSARY IN THE FIRST-GRADE INSTRUCTIONAL SETTING. (MD)

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FIRST GRADE READING INSTRUCTION USING A DIACRITICAL MARKING SYSTEM, THE INITIAL TEACHING ALPHABET AND A BASAL READING SYSTEM

COOPERATIVE RESEARCH PROJECT 2745

Edward Bernard Fry, Principal Investigator

Director of the Reading Center
Rutgers-the State University
New Brunswick, N.J.

1965

The research reported herein was supported by the Cooperative Research Program of the Office of Education, U.S. Department of Health, Education, and Welfare.

ED 003387

TABLE OF CONTENTS

Title Page i
Table of Contents ii
Preface iii
Acknowledgements iv, v
List of Tables vi

PAGE

Level 1 ABSTRACT 1
I tells 'em what I'm gonna tell 'em.

Level 2 OVERVIEW 2
I tellz 'em.

Level 3 TEST EXPLANATION 7
We discussez them tests some mo.

Level 4 DMS METHOD 13
I tellz 'em about de DMS.

Level 5 CORRESPONDENCE 22
De fuss in London Timez.

Level 6 FORMAL REPORT 30
De formal stuff fo dem government folk.

Level 7 TABLES 41
All dem purdy numbers.

Level 8 BIBLIOGRAPHY 79
Who said dat?

Level 9 APPENDIX-READINESS 31
What fo dat readiness stuff?

PREFACE

Many research reports that I have tried to read seem to have been written in such a manner as to discourage me by every known device. They used the most boring style. They started off assuming that I was already a specialist in the field. And worst of all they often omitted data that I wanted.

This research report may not be too orthodox, but I hope it solves some of these problems.

We are going to roughly follow the old country preacher's plan for making a sermon:

I tellz "em what I'z gonna tell 'em.
I tellz 'em.
I tellz 'em what I told 'em.

In addition we are going to follow a kind of spiral development program of increasing complexity. The reader can get the main idea of this research on the first page, and if he wants to know more he can read on.

Since the U.S. Office of Education has it's own ideas of how a research report should be organized, we have tried to comply with their requests by a more formal section in Level 6.

E.F.

Acknowledgements

No project of this size is a one man operation. Dr. Lee Mountain who served the project as a supervisor on a quarter time basis ,has worked much more than her quarter. She was particularly valuable in the preparation of materials.

We also had several graduate students who worked on the project in a professional capacity for about a semester each. I would like to pay recognition for doing an untold variety of tasks to Miriam Micali, Helma Heard, Roberta Lipo, Ann Marie Flint.

We have also had good cooperation from the three school districts involved and this is largely due to their superintendents, Dr. James Kimple, Dr. Kenneth McKenzie, and Dr. Theodore Schor.

The 21 classroom teachers also volunteered for more than they knew, but performed magnificently.

D.M.S	T.O.	I.T.A.
Miss Judith Adams Arbor School New Market, N. J.	Miss Justina Long Fellowship Farm School New Market, N.J.	Mrs. Marie katz Fellowship Farm School New Market, N. J.
Mrs. M.J. Botsford Grandview School New Market, N.J.	Mrs. Jacklyn Kasher Knollwood School New Market, N.J.	Mrs. Ellen Miller Holmes Marshall School New Market, N.J.
Mrs. Jean Copper New Market School New Market, N.J.	Miss Bernice Ringler Knollwood School New Market, N.J.	Mrs. Eliz. Griffin New Market School New Market, N.J.
Miss Harriet Lester New Market School New Market, N.J.	Miss Judith Horton Randolphville School New Market, N.J.	Miss Phyllis Saltman New Market School New Market, N.J.
Mrs. Agnes Clayton Lafayette School Highland Park, N.J.	Mrs. M. Zullinger Lafayette School Highland Park, N.J.	Miss Helene Meagher Hamilton School Highland Park, N.J.
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Mrs. Virginia Joslin
Constable School
Kendall Park, N. J.

Mrs. Joan Warner
Constable School
Kendall Park, N.J.

Mrs. Joan Jones
Dean School
Monmouth Junction, N.J.

Allyn and Bacon publishing Company was also very cooperative in allowing us to reprint their books with an DMS overprint and in supplying books to the TO classes on a loan basis.

We also received valuable consulting from Dr. Richard Johnson, Statistics; Dr. Charles Cress, Statistics; Mr. Jack Martin, Data Processing; Dr. Albert Mazurkiewics, ITA method; the Initial Teaching Alphabet Publications staff, ITA method; Dr. Mary Austin, TO method.

We would also like to acknowledge general coordination support for this project by Dr. Guy Bond and Dr. Robert Dykstra and their colleagues at the University of Minnesota. And for helping us through some of the proposal and reporting technicalities plus displaying a continuing interest, we would like to thank our project monitor, Dr. Doris Gunderson.

Within Rutgers University we received assistance from our Dean of Education, Dr. John O'Neill and his secretary Mrs. Evelyn Bradley who handled some of our requisitioning problems; Mr. Albert Hanna and his staff in the Contracts Administration office; the Provost, Dr. Richard Schlatter who materially helped the principal investigator get to London to report on this research.

Excellent secretarial assistance has been contributed by Mrs. Natalie Bogosian, Mrs. Eileen Rosand, and Mrs. Anne Kahn.

The University Duplicating Service also did a fine job of photo offsetting the entire set of 1st grade materials for the DMS method group at nominal expense and inconvenience.

LIST OF TABLES

Table 1. Murphy-Durrell Phonemes (September) Page 42
2. Murphy-Durrell Letter Names Test (September) " 43
3. Murphy-Durrell Learning Rate (September) " 44
4. Thurstone Pattern Copying (September) " 45
5. Thurstone Identical Forms (September) " 46
6. Metropolitan Word Meaning (September) " 47
7. Metropolitan Listening (September) " 48
8. Metropolitan Matching (September) " 49
9. Metropolitan Numbers (September) " 50
10. Metropolitan Copying (September) " 51
11. Metropolitan Alphabet (September) " 52
12. Metropolitan Total (September) " 53
13. Detroit Word Recognition Test (September) " 54
14. Pintner-Cunningham Raw Score (October) " 55
15. Pintner-Cunningham I.Q. (October) " 56
16. Instant Word Recognition Test (December) " 57
17. Stanford Word Reading (May) " 58
18. Stanford Paragraph Meaning (may) " 59
19. Stanford Vocabulary (May) " 60
20. Stanford Spelling (May) " 61
21. Stanford Word Study (May) " 62
22. Detroit Word Recognition (May) " 63
23. Correlation Matrix " 64
24. Sex and Age Grouping of Stanford Paragraph Meaning Reading Tests " 65
25. Sex and IQ Grouping of Stanford Paragraph Meaning Reading Tests " 66
26. Sub-sample Means on Oral Tests (May) " 67
27. Sub-sample Means on Writing Sample (May) " 67
28. Age of Children " 68
29. Age of Teacher " 69
30. Highest Degree Held by Teacher " 69
31. Type of Teaching Certificate Held by Teacher " 70
32. Total Number of Years of Teaching Experience " 70
33. Total Number of Years of First Grade Teaching Experience " 71
34. Marital Status of Teacher " 71
35. Number of Children Teacher Has " 72
36. Teacher Rating of Overall Competence " 72
37. Teacher Rating - Class Structure " 73
38. Teacher Rating - Extent of Class Participation " 74
39. Teacher Participation - Awareness of and Attention Paid to Individual Needs of Pupils " 75
40. Teacher Attendance " 76
41. Community Education Level " 76
42. Community Income Level " 76
43. Population of Community " 76
44. Pupil Attendance " 77
45. Class Size " 78
46. Sample Copy - Fry Phonetically Regular Words Oral Reading Test. " 78

ABSTRACT

Level 1

I tells 'em what I'm gonna tell 'em

This study compared three methods of first-grade reading instruction--The Initial Teaching Alphabet (ITA), The Diacritical Marking System (DMS), and the Sheldon Basal Readers in traditional orthography (TO). Each method was tried out in seven classes for one year.

The ITA is supposed to greatly facilitate beginning reading instruction by using a constant or nearly-constant phoneme-grapheme correspondence. In other words, each symbol makes only one sound. ITA uses different spelling rules and has sixteen new symbols in its alphabet.

The DMS also maintains the one-sound-per-symbol relationship, but not by respelling words as in ITA. Instead, the DMS uses diacritical marks on words to keep the sound-symbol relationship regular and to help pupils develop the ability to sound out words.

The Sheldon Basal Readers use traditional orthography. Like most basal readers, they do not have a strong phonic approach.

The main interests of this study are twofold: (1) Is one of the three methods significantly superior to the others? (2) Does the principle of greater phonetic regularity, as found in ITA and DMS but not in TO, aid in beginning reading instruction?

When we measured reading skills in the twenty-one classes at the end of first grade, we didn't find much difference in the test results of the three methods groups.

This study is being continued another year so that we can retest to find out if any significant differences show up in the middle or at the end of the second grade. We are also preparing and trying out a new set of DMS preprimers which introduce words that facilitate the teaching of the Diacritical Marking System.

OVERVIEW

I tellz 'em *

Three methods of teaching first grade reading were compared in 21 first grades. Two of the methods, the Diacritical Marking System (DMS) and the Initial Teaching Alphabet (ITA) were new, different, and emphasized a phonetically regular orthography. These methods were compared with a regular basal reading series, the Sheldon Readers published by Allyn and Bacon.

This study was one of the 27 first grade studies sponsored by the U.S. Office of Education (Project 2745) during the academic year 1964-65. Hence this study has in common with the other 26 studies the same initial reading readiness tests, IQ tests and reading achievement tests. We have a common teaching time of 140 school days; a common system of teacher rating and other measures and even have agreed to punch our data into the same column of punch cards for comparative studies.

The most unique reading method of our particular study was the use of a Diacritical Marking System, as an attempt to do essentially the same thing as the ITA with a different method. Since there are more sounds in English than there are letters, ITA has attempted to solve this problem by creating additional characters for the language. The DMS attempts to solve the problem by adding diacritical marks to regular letters and thus achieve an even higher degree of phonetic regularity. Whereas ITA respells many words even when traditional letters are used, the DMS never changes the spelling. ITA chiefly attempts to handle the problem of additional sounds by the creation of a new character composed of two more traditional characters fused together. For example, the ITA character for the long *a* sound is a symbol with a lower case *a* and *e* fused together. The DMS symbol for a long *a* is simply an *a* with a bar over it. For those interested in a more detailed description of these methods, the first published detailed account of the Diacritical Marking System can be found in the May 1964 issue of *Elementary English.* There are numerous published descriptions of the ITA. One good and complete description can be found in John Downing's book *The Initial Teaching Alphabet*. (Macmillan, New York, 1964). A further description of these methods appears later in this report.

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* This section is a speech given at the National Council of Teachers of English in Boston, November 1965.

The basal reading series used was the regular edition of the Sheldon Readers (Allyn and Bacon 1963).

The ITA material used was the Early to Read i/t/a Program by Albert Mazurkiewicz and Harold Tanyzer published by Initial Teaching Alphabet Publications, Inc. a division of Pitman Publishing Company (1963).

The Diacritical Marking System materials used were a specially marked set of the Sheldon Readers. With the publisher's permission, we used the regular entire first grade series including workbooks. This had the advantage of pages which looked exactly like the regular Sheldon Readers except that they were in black and white. We did not mark any second grade materials and, in most cases, at least the top group in each first grade was in the regular unmarked color picture edition of the Sheldon Readers. DMS teachers had in addition to the regular teacher's manuals, an additional set of instructions for teaching the diacritical marks to the children. This supplementary method was centered around the teaching of one phoneme-grapheme correspondence per preprimer lesson. The teacher made a chart showing the letter and several words illustrating the use of that letter, with at least one of the words being illustrated by a picture. These charts were put up around the room so they could be referred to later.

It took until about the middle of the primer for all the phoneme-grapheme correspondences to be introduced on charts. We did not insist that the children learn them all by the time they reached the middle primer, but the brighter children had a good many of them and a systematic review was then started.

In terms of writing, we did not require that the child learn to write the DMS marks though many of them chose to. The teacher did use diacritical marks on experience charts and on all work written on the blackboard or in specially prepared handouts.

Hence, as nearly as possible, every word the child saw until he had completed the Allyn and Bacon first grade program had a diacritical mark on it. Fortunately, the arithmetic books had very few words in them and they were not marked. The districts that we were operating in did not use a prepared speller. The system broke down a little when it came to supplementary reading materials as we had very few with Diacritical Marks. The reason for this was simply the expense. However, most of the DMS rooms did have a stock of unmarked first grade reading materials.

One of the characteristics of this study was the care that we used in controlling for the Hawthorne effect. First we tried as nearly as possible to compare three new methods. Certainly the diacritical marks looked different than ordinary reading as did the ITA materials. Even the basal readers were different because they were "new" in each district where we worked. In addition, methods were assigned to classrooms at random. In other words, in the spring the teachers volunteered to participate in the project, not knowing which method they would teach. They were assigned the method by lot. All teachers were given workbooks and sample materials to study during the summer and one day of teacher training was given before classes began in the fall. Though visitors were discouraged, when they did request to see project classes, we attempted to see that they spent equal time in each of the three methods. Additional teacher training sessions and supervision visits were also kept equal.

Pretests indicated that there was essentially no difference between the seven DMS classes, the seven TO classes and the seven ITA classes (the regular Allyn and Bacon series was labeled TO for Traditional Orthography). Table 15 shows the IQ scores for the Pintner-Cunningham General Ability Tests (the 1964 form of the Pintner-Cunningham IQ tests), the subtests and total scores of the Murphy-Durrell Diagnostic Readiness Test and the total scores of the Metropolitan Reading Readiness Tests. It might be noted that the TO group consistently comes out a little higher but analysis of variance does not show this as statistically significant. (See Tables 1,2,3, and 12).

It is difficult to measure teacher competence, but this may be one of the most important factors in the teaching of reading. Table 3 3shows that the ITA teacher had about 4 years more experience in first grade than the teachers of the two other methods and on a subjective teacher rating the DMS teachers came out low; see Table 36.

Results

The chief instrument for measuring reading success in all of the 28 first grade studies was the Stanford Achievement Test Primary Battery. This test does not yield a total reading score hence; subtest scores are reported in Table 17 to 21. Analysis of variance does not show any statistically significant difference in any of the reading subtests. We feel that probably the Paragraph Meaning subtest is the most important as this represents a true complex reading task. Word Reading is simply a matching of picture to a word and the Vocabulary subtest is not a reading test at all but more akin to a verbal intelligence test.

Contents

Bill 3
Lindả 7
Ric̸ky 11
Rags̲ 15
Midnig̸h̸t 19
Mỏt̲h̲e̸r 23
Daddy 27
Lindả and Mỏt̲h̲e̸r Wørk 31
Cỏme̸ and Help 35
At Hōme̸ 39
Cỏme̸ and Sēe̸ 43

Illustrated by Beatrice Derwinski

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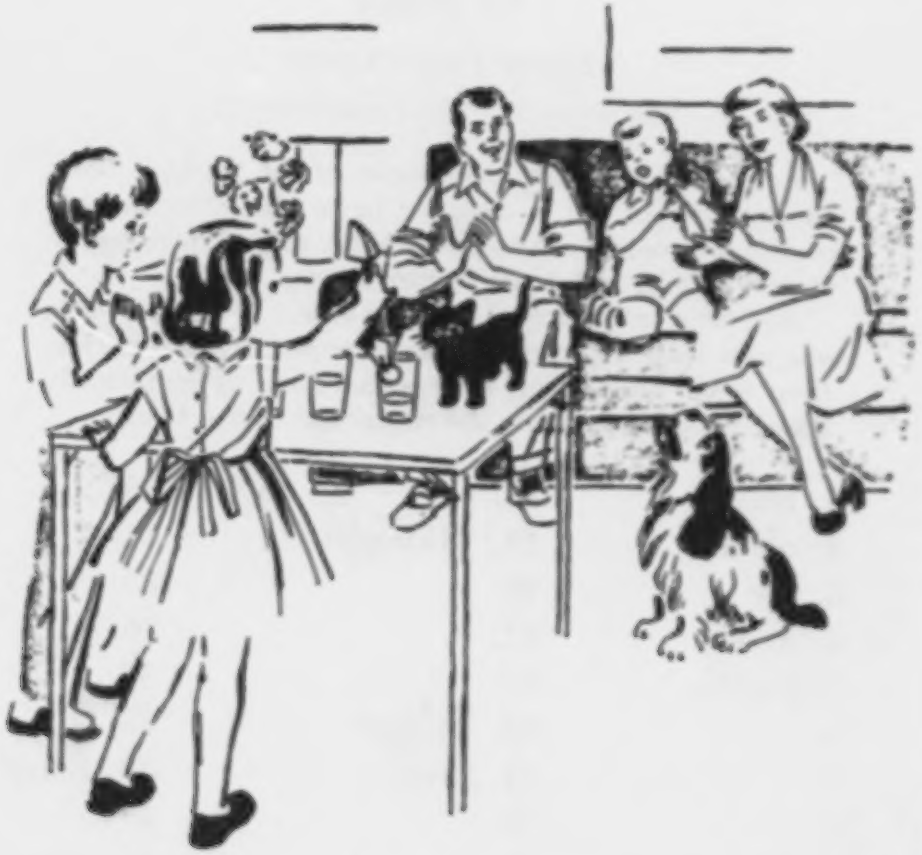
Printed in the United States of America



Lȯøk at Midnīg̸h̸t.
Lȯøk at Rags̲.
Midnīg̸h̸t and Rags̲ can help.

At Hōme̸

First Pre-Primer

New words: 21. Total vocabulary: 21.

At Home is the first pre-primer of the Sheldon Basic Reading Series. It is designed to be read after the successful completion of the preparatory reading program — *Picture Stories* and *More Picture Stories.*

At Home introduces 21 new words. Not more than one new word is introduced on a page. After introduction, each new word is repeated and systematically maintained throughout the remainder of the book.

3. Bill
4. cóme̸
5. sēe̸
6. and
7. Lindả
8. . . .
9. . . .
10. . . .
11. Ric̸ky
12. hēre̸
13. . . .
14. . . .
15. Rags̲
16. run
17. fast
18. to
19. Midnīg̸h̸t
20. . . .
21. . . .
22. . . .
23. Mỏt̲h̲e̸r
24. help
25. . . .
26. . . .
27. Daddy
28. mē
29. lȯo̸k
30. . . .
31. wo̸rk
32. at
33. . . .
34. . . .
35. . . .
36. . . .
37. . . .
38. . . .
39. hōme̸
40. . . .
41. can
42. . . .
43. . . .
44. . . .
45. . . .
46. . . .
47. . . .

At Hōme̸

by

William D. Sheldon

Queenie B. Mills

Merle B. Karnes

Experimental Edition
Diacritical Marking Syste

Rutgers University
New Brunswick, N.J.

DMS copyright 1964
Edward Fry

1963

Allyn and Bacon, Inc.

Boston Rockleigh, N.J. Chicago Atlanta Dallas Belmont, Calif.

The Spelling subtest is an old fashioned spelling test with a teacher reading words aloud and children writing them down. DMS marks were ignored and ITA pupils had their test scored twice: once for number of words correct with TO spelling (not calling ligature between letters wrong), and the ITA papers were scored a second time allowing ITA spelling. As might be expected, the ITA children were significantly inferior to the other two groups if TO spelling standards were upheld, but there was no significant difference if they were allowed to write and spell in ITA. (Table 20).

A subsample of about 40 pupils randomly selected from each of the 3 methods groups was also given some oral reading tests and the results are shown in Table 26 The Gilmore Oral Reading Paragraphs were administered and the accuracy score was computed (10 points per paragraph-less errors made). The comprehension section was not given. The grade scores, while favoring TO, were not significant.

The Gates Word Pronounciation Test is a graded list of words of increasing difficulty which are read aloud. There was a slight difference favoring the ITA, but this was not significant. On a list of phonetically regular words read orally, the ITA group was significantly superior.

A large correlation matrix was run between 17 variables. While this is probably too much data to report here, a glance across one line might prove interesting. Table 23 shows the correlation between the Stanford Paragraph Meaning subtest and a number of other variables. It is interesting to note that the Pintner raw score had the highest predictive validity. It is higher than IQ or the subtests or total scores on either the Murphy-Durrell or the Metropolitan Reading Readiness Tests. What this means is that if you want to know who will most likely succeed in 1st grade reading. look at the Pintner raw score which is the same as mental age if converted.

Last but not least, Table 18, which shows the classroom means on the Stanford Paragraph Meaning rather clearly, indicates the great degree of variability between classrooms even within one method. This Table alone should certainly help to cast doubt on all previous reading studies which use only 1,2, or 3 classrooms. This table clearly shows how even within one method such as TO or ITA the classroom means can vary. To have any credibility at all, future reading research comparing methods simply must have the relatively large number of classrooms. This Table might also lend a little credence to the suspicion in many people's minds that it is really the teacher that makes the difference, not the method.

As part of this study we also collected samples of the children's writing. It is hard to compare writing samples, but in one objective measure, total words written, the ITA children wrote significantly more. However, our study was primarily a study of reading ability and no attempt was made to standardize the instruction in writing. For example, the ITA group had a heavy emphasis on children's writing in the teacher's manuals of the Mazurkiewicz and Tanzer series while the TO group using the Sheldon Readers had no specific instructions on the teaching of writing. While it is interesting that the ITA children wrote more than the other groups, we wish to emphasize that this research study was devoted to reading and to really say whether or not one method is better for writing would require a different research design.

Conclusions and Future Plans

There was no significant difference in the silent reading ability tests at the end of first grade taught by the Diacritical Marking System or the Initial Teaching Alphabet or a regular basal reading series. No oral reading test showed any significant difference except one which used only phonetically regular words.

A word of caution is in order in that these results are based on tests written in TO. This possibly gives some disadvantage to children who have not yet transferred from ITA or DMS. However, Downing in the 1963 Proceedings of the International Reading Association did test ITA trained and only partly transferred children in TO and found that the ITA group was significantly superior. Our results did not confirm this finding. Rather our results are more in harmony with the finding of Mazurkiewicz, who, using the California Achievement Test in TO, did not find any significant difference in Reading Comprehension at the end of 1st grade or at the end of 2nd grade (The Journal of the Reading Specialist-Sept. 1964 and Oct. 1965). At the time of testing we estimate that about only 40% of the ITA children had transitioned and about 60% of the DMS children had transitioned. We do not feel the transition was any problem at all for most children, but for the lowest quarter of the class, it could have caused some problems. We hope that these problems will be remedied by testing children in TO at the end of 2nd grade when most of them should have been completely transferred to TO, but if Mazurkiewicz's study is any guide, we may still find no difference.

TEST EXPLANATION

Level 3

We discusses them tests some mo. *

The following tests were given about the end of September. Testing times were staggered but there were 140 days of instruction between beginning tests and tests for all groups.

PINTNER GENERAL ABILITY TESTS (revised)

	DMS	TO	ITA
IQ Score Means	97.7	101.3	98.2

Analysis of variance: not significant.
Correlation with Stanford Paragraph .75

MURPHY-DURRELL DIAGNOSTIC READINESS TEST

This is a new readiness test and there are no norms but the raw scores are sometimes interesting. We goofed on one sub test, Phonemes, so it is not reported, and this makes a total score also unreportable.

Letter Names: One of Durrell's pet interests now is that if a child knows letter names he learns to read much easier. In this test the child marks one of 5 capital or lower case letters as the teacher calls out the letter name. Score is the number correct; maximum 62.

	DMS	TO	ITA
Raw Score Means	27.2	32.9	29.4

Analysis of variance: not significant.

Learning Rate Test: In this test the child is taught 9 new words in a little demonstration lesson. One hour later the child is tested to see if he remembers the words by being asked to pick out the correct word learned from a line of 3 words. Maximum 27.

	DMS	TO	ITA
Raw Score Means	7.5	8.1	7.1

Analysis of variance: not significant.
Correlation with Stanford Paragraph .57

---

* This is based on a report given to the project teachers. These scores might be slightly different from the results in the tables as a few cases were dropped from final tables because of incomplete data. There were no changes in significance.

METROPOLITAN READINESS TEST

For those who like readiness tests, this is one of the big well known ones.

Test 1, Word Meaning: This is essentially a vocabulary test such as is commonly found in IQ tests. The teacher says, "Mark the stone house", and the child marks one of three pictures. Maximum score 16.

	DMS	TO	ITA
Raw Score Means	9.1	9.1	8.9

Analysis of Variance: not significant.
Correlation with Stanford Paragraph .56

Test 2, Listening: Tests the student's ability to follow spoken directions. For example, the teacher says: "One of these grows on a tree", and the child marks one of three pictures. Maximum 16.

	DMS	TO	ITA
Raw Score Means	9.4	9.6	8.8

Analysis of variance: not significant.

Test 3, Matching: Child looks at a word or symbol in left margin and marks one of three choices for similarity. Maximum 15.

	DMS	TO	ITA
Raw Score Means	6.3	7.2	5.9

Analysis of variance: not significant.

Test 4, Alphabet: Teacher says the name of a letter and the child marks one of four choices. Maximum 16.

	DMS	TO	ITA
Raw Score Means	7.5	9.9	8.3

Analysis of variance: not significant.

Test 5, Numbers: Child demonstrates knowledge of various words and concepts related to arithmetic. Test items range from "mark the biggest" to "mark the number that means more than 2 but fewer than 6. Maximum 26.

	DMS	TO	ITA
Raw Score Means	10.6	11.5	9.8

Analysis of variance: not significant.

Test 6, Copying: Child copies letters, numbers, or various simple designs. Maximum 14.

	DMS	TO	ITA
Raw Score Means	6.2	7.3	6.2

Analysis of variance: not significant.

Total: Sum of all raw scores

	DMS	TO	ITA
Sum of Tests, 1-6	49.1	53.9	48.1
Percentile	38	48	36

Analysis of Variance: not significant.
Correlation with Stanford Paragraphs .62

FINAL TESTS

Not all subtests are of equal importance. For example, "Paragraph Meaning" on the Stanford we consider quite important as this is a major measure of one of the most important reading skills - comprehension. On the other hand "Vocabulary" subtest is not a reading subtest at all - it is a kind of measure of general intelligence but requires little or no reading ability. For these reasons, therefore, we ask that you look at each subtest carefully.

In interpreting grade level scores, the manual on the Stanford says that at the time of the year at which the testing is done, a grade level score of 1.8 is normal. Our subjective feeling is that these grade level norms are rough; in other words, for the reading ability of the child (and raw score) the grade level score seems low. This is based on the observed fact that many children were successfully reading in second grade books at the time of testing.

STANFORD ACHIEVEMENT TEST (no total scores)

Word Reading: A moderately valuable reading skill - student looks at a picture and selects one of four words (noun or verb) which is best represented by the picture.

	DMS	TO	ITA
Raw Score Means	18.7	20.3	20.5
Mean converted to Grade Score	1.7	1.7	1.8

Analysis of variance - not significant.

Paragraph Meaning: Probably the most important single subtest of the entire research project. Student reads several sentences and selects one of four words which would complete meaning.

	DMS	TO	ITA
Raw Score Means	17.3	20.4	17.6
Mean Converted to Grade Score	1.7	1.7	1.7

Analysis of variance - not significant.

Vocabulary: This test requires no reading at all. The teacher reads a sentence or sentence fragment and the student chooses one of three words or phrases which answer question or complete sentence. This subtest is probably most akin to a verbal intelligence test.

	DMS	TO	ITA
Raw Score Means	21.2	23.0	22.3
Mean Converted to Grade Score	1.8	2.1	1.9

Analysis of variance - not significant

Spelling: This is simply an old fashioned spelling test. The teacher reads the words aloud and the child writes down the word. DMS marks were ignored in scoring and ITA pupils had tests scored twice, once in the number of correct words in TO (not calling ligature letters as wrong if otherwise correct)- for example, green is correct but hiz is wrong. The other scoring of ITA papers counted ITA spelling as correct.

Raw Score means	DMS	TO	ITA (TO spelling)	ITA (ITA spelling)
Raw Score means	8.8	11.0	7.4	10.5
Mean Converted to Grade Score	1.7	1.9	1.6	1.9

Analysis of variance- significant, .05 level not including ITA spelling.

Word Study Skills: This is a kind of weak test of miscellaneous phonic skills. Half the test is simply asking the child if he can hear similar beginning and end word sounds (no reading involved, this is listening). The other half of the test asks the child to pick out words with similar beginning or ending sounds (child must read initial consonant, blend or final phonogram - for example, child is told to "mark a cross next to the word that rhymes with BITE" and is shown three words: "sight, sigh, side").

	DMS	TO	ITA
Raw Score Means	34.2	34.8	35.1
Mean Converted to Grade Score	1.8	1.8	1.8

Analysis of variance - not significent.

DETROIT WORD RECOGNITION TEST

This is a short (four minute) and old (copyright 1925) little test in which the child looks at a picture and draws a line to a word or phrase represented by the picture. Examples of words and phrases are "chair" and "a girl running".

	DMS	TO	ITA
Raw Score Means	19.6	24.3	18.9

Analysis of variance not significant.

(Norms only say that a raw score is 20 at the end of Grade 1 and 33 at the end of Grade 2).

ORAL TESTS

The following final tests were given only to a sub sample of about 40 randomly selected pupils in each methods group. Each was administered individually and required only oral responses from written stimuli.

GILMORE ORAL READING PARAGRAPHS

This is the accuracy score obtained by asking the child to read the paragraphs aloud and computing number of errors. The comprehension section of the Gilmore was not given.

	DMS	TO	ITA
Mean converted to Grade Score	2.5	3.1	2.7

Analysis of variance not significant

GATES WORD PRONOUNCIATION TEST

This is a graded list of words of increasing difficulty which the student is asked to read aloud. Score is the number of words read correctly.

	DMS	TO	ITA
Raw Score Means	10.0	12.7	14.0

Analysis of Variance - not significant.

PHONETICALLY REGULAR WORDS ORAL READING TEST (FRY)

This is a list of only phonetically regular words graded roughly in order of difficulty by vowel sounds used: short vowel words, long vowel words, broad A, vowel modified by R, double O. Child reads aloud from list. Score is number of words read correctly.

	DMS	TO	ITA
Raw Score Means	4.6	7.9	10.8

Analysis of variance: significant at .01 level.

Level 4

I tellz 'em about de DMS*

From the phonetic standpoint, the basic difficulty with English is that in speaking we use about 44 phonemes, while in writing it we have only 26 letters available. By definition, an alphabet is a set of graphic symbols which stand for speech sounds or phonemes. Hence, we cannot possibly have a good correspondence. To make matters worse, there are a number of spelling inconsistencies. Scholars have long been aware of this problem, and attempts to do something about it probably go back as far as the history of English. To cite but two examples: John Hodges had a system of diacritical marks for beginning readers in 1644, and Benjamin Franklin proposed a new and augmented alphabet in 1768.

The current flurry of activity is probably directly traceable to the well publicized and well financed efforts of Sir James Pitman during the past few years. Pitman developed the ITA and, with the help of his political office (Member of Parliament), his own publishing firm, and the Ford Foundation, the ITA has spread very rapidly. John Downing, who heads the largely Ford financed Reading Research Unit at the University of London, has estimated that approximately 1,000 schools in the United Kingdom will, at least in part, be using the ITA during the school year 1965-66. United States figures are difficult to obtain, but it is probably safe to say that there are at least several hundred schools using ITA, apart from specific formal research studies. There are minor uses of ITA throughout a good bit of the English speaking world from Africa to Australia.

It is incumbent upon educational researchers to take a good hard look at any system which radically changes the type of materials used in beginning reading instruction, if for no other reason than that the financial implications are so large. In the United States alone, approximately 4,000,000 children enter first grade every year. To switch from traditional books to ITA, for example, costs the school system about twelve dollars per child for the first year. Thus, we are talking about a possible U.S. expenditure of about fifty million dollars, not to mention the cost to the rest of the English speaking world. We might hope that Congressmen, Members of Parliament, and even taxpayers might feel a little more kindly towards educational research when they see the magnitude of decisions school officials must make.

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* This section was part of a talk before the American Psychological Association in Chicago, September 1965.

But the most important considerations are not financial. After all, what is fifty million dollars compared to the cost of sending a rocket to the moon, or even compared to the annual cost of igniting small shreds of tobacco leaves. The real problem is: Will some system of improving the phoneme-grapheme relationship increase the efficiency of a child or adult learning to read, and will there be a lack of undesirable residual or side effects? The second problem is: If an improved phoneme-grapheme correspondence is beneficial, which method of achieving it is best? It is in light of these problems that the DMS was developed and the subsequent research study conducted.

It is not the purpose of this paper to describe the ITA but, briefly stated, it regularizes the phoneme-grapheme correspondence by augmenting the alphabet. It works by adding 16 new characters and by changing the spelling rules so that some words do not use any new characters, but do use a different spelling than traditional English. The DMS as a system attempts to achieve the same goal of increased efficiency for beginning readers, without the possibly undesirable perceptual problems of altered word form and spelling problems of altered spelling which must be rectified later. Though, of course, the diacritical marks do change the word form a little, still, the basic traditional word form is very apparent and spelling is unchanged.

THE DIACRITICAL MARKING SYSTEM RULES

The following set of rules represent a compromise between a system accurate enough to satisfy a phonetician and what is practical to teach a first grade child. Hence, they are slightly less complete than most dictionary systems, but generally they are in harmony with the work of Bloomfield and the Thorndike-Barnhart dictionaries. The author has recently done some work on the frequencies of various phonic sounds and their spelling (Fry 1964). DMS uses this frequency information and tends to give no or simpler marks to the more frequently used graphemes. The basic DMS rules follow.

1. Regular consonants and short vowels are not marked. This is in line with the fact that these are the most frequent uses of these letters.

2. Long vowels have a bar over mark. For example: gō, mē. This is in line with many dictionary diacritical systems.

3. Silent letters are slashed out. For example: māde̸, māi̸d. This is extremely useful in explaining the sounding out of words to children. It explains nicely why "made" and "maid" make the same sound while differing visual forms acknowledge the semantic differences. The DMS also helps to keep the teacher from teaching partially misleading phonics rules like "The E at the end of a word is silent and it makes the preceding vowel long" (note: "come"), or the more misleading, "When two vowels are together the first is long and the second is silent" (note: "boil").

4. The unaccented vowel (schwa) has a comma over it. For example: a̓gō, e̓no̸ugh̸, o̓t̲h̲e̸r. Note that every A, E, and O at the beginning of each of these example words make the same sound. There is no good phonics rule to tell the child when he should make a schwa sound for a vowel, yet the schwa has a surprisingly high frequency.

5. The broad O sound is indicated by a circumflex: For example: ôff, âu̸tō. This sound is most often made by an A before U, W, or L (auto, awful, all), but it has practically no cues as to when it is made by an O.

6. The second sounds of consonants have a bar under. For example: is̲, g̲em, c̲ity. There are only three consonants that have two sounds (apart from digraphs), and the second in terms of frequency are indicated by the bar under the letter.

7. Consonant digraphs have a bar under both letters. For example: s̲h̲ut, t̲h̲at, c̲h̲at, w̲h̲en, sin̲g̲. Note that the six consonant digraphs are not blends. They make a unique phoneme, not a blend of two phonemes. Blends (BL, CR, SM, etc.) are not marked. Unfortunately, one consonant digraph, TH, has both a voiced and voiceless form or, in other words, makes two different phonemes, so the less frequent or voiceless has a double bar under it. For example: t̳h̳in̲g̲.

8. Diphthongs have a bar under both letters. For example: bo̲y̲, bo̲i̲l, o̲u̲t, o̲w̲l. There are only two of these unique vowel sounds, each with two spellings.

9. One dot U vowels have a dot over. For example: pu̇t, lȯo̸k. This is not a short U sound as in "up". It is sometimes called the Short Double O.

10. The two dot vowels have two dots over. For example: rüle̸, möo̸n, nëw̸. This is not the long U sound as in "use". It is sometimes called the Long Double O.

11. The letter R is sometimes a vowel. There is a rule in English which states that every syllable (and hence every word) must contain a vowel. By calling R a vowel, we can nicely handle the fact that after the preceding phoneme words that have an ER, IR or UR, all have the same sound. For example: he̸r, si̸r, fu̸r. Note that the R in these words sounds the same as the beginning sound in "red". While dictionaries would call the E, I, and U before an R a schwa, slashing them out seems to make a lot of sense to first graders and the author.

12. The letter A before an R has two sounds. The first unique sound we handle by a bar under both letters. For example: far. The second sound of AR we slightly inaccurately call a long A before R. For example: vāry. It is perhaps worth noting here that O before R is the broad O. For example: for.

13. The Y rule. By far the commonest use of the letter Y is when it makes the long E sound at the end of a polysyllabic word, hence this use is unmarked. For example: funny. Many dictionaries would call this use of Y the short I sound, but a few agree with the author that it is a long E. In any event, it is the commonest use of Y and it doesn't matter which sound the teacher chooses to call it. The second commonest use of Y is the long I sound at the end of the monosyllabic word or in the middle of a word. It is marked with a bar over. For example: mȳ, cȳcle̸.

Finally, the least common use of Y is as a consonant which is usually at the beginning of a word, and this is marked with a bar under. For example: yes.

14. D, L, and N suffixes have no vowel. This is simply an extension of the rule established for E, U, and I before R. The schwa vowel is slashed out in D, L, and N suffixes. For example: āble̸, happe̸n, live̸d, penci̸l. The L sound in "āble̸" and "penci̸l" sounds just like the L in "love" and seems to follow immediately the preceding consonant.

15. The QU digraph has a bar under both letters. The consonant Q has no sound (phoneme) of its own and furthermore nearly always appears with a U. The

QU together make a KW sound. It is marked̲ with a bar under both letters. For example: q̲u̲ee̸n. The other worthless consonant, X, (no phoneme) is unmarked because it does not involve any other letters and usually makes the KS sound. For example: box.

16. Double consonants unmarked. The problem here is that sometimes the second consonant is useless and could be slashed out, for example, "class", and sometimes the second consonant contributes to the syllabification, for example, "lesson". Rather than having teachers worrying about this or trying to explain it, we say don't mark double letters; if superfluous they don't affect the sound much anyway.

17. Four sight words are unmarked: the, a, to, of. There are two reasons for this. The first is that these structure words have such high frequency that they are readily learned as sight words and not marking them saves a lot of marks. The second point has more linguistic significance in that in normal speech we say "the̓ mat" not "thē mat," or "a̓ cat" not "ā cat." Anybody who says "I went tö the store" instead of "I went to͐ the store" is probably talking to his English teacher. In brief, three of these little words can be pronounced two ways, and probably the least academically acceptable pronounciations, so some teachers erroneously think, are the most common. We avoided the problem by not marking them. The fourth word, "of," doesn't follow any kind of regular phoneme-grapheme correspondence, yet it has a high frequency.

18. Exceptions are marked with a plus sign over the letter. For example: $\overset{+}{\text{o}}$nce, $\overset{+}{\text{a}}$ny. The above 17 rules take care of over 99% of the phoneme-grapheme correspondence used in English writing. There is no point in proliferating rules to take care of such infrequent cases as the fact that O sometimes makes a W sound in "once," or that A sometimes has a short E as in "any." We found that we had to use the plus sign very infrequently in marking first grade reading material.

It is probably of passing interest that the bar mark, above or below, tended to be generic; that is, it stands for a class of things such as long vowels, consonant digraphs, diphthongs, second sounds of consonants, or when turned-at-an-angle, silent letters, while the other marks tended to stand for phonemes. For example, the circumflex stands for the broad O sound regardless of letter, and likewise for the comma-over, one dot and two dot marks.

Even though this system might seem a trifle complicated for those unfamiliar with the phonetic study of English, all of the first grade teachers in our research study were able to master it after only a few hours of study. It is perhaps an indictment of teacher training in America that it took a few hours to master. The prevalence and use of the Schwa, and the differences between one dot U and short U were something that apparently had never dawned on some teachers of reading. The author regularly teaches these DMS rules to teachers in a graduate reading course, and the high frequency of their errors while using it on an examination is due more to their unawareness of the sounds (phonemes) used in English than to the complexity of the DMS rules. If nothing else, this system is excellent for teacher training. Simply assign the teachers to mark up a few pages of a text -- it will open both their eyes and yours.

TEACHING METHOD

For this study we marked by hand a complete set of Allyn and Bacon first grade materials, basal texts and workbooks with diacritical marks. These were then photo offset and bound. A sample page is included next.

The regular teacher's manual was given to the teacher and in addition teachers were given one day of training in a workshop plus frequent memorandums like the following:

DMS Memo To Teachers No.1.

From: Dr. Fry

Dr. Mountain and I have been working on the problem of how fast to introduce DMS sounds (phonics). We were a little concerned that introducing all the consonant and vowel sounds used in each preprimer lesson would be a little too much for First Graders even though we don't expect all of them to get all of the sounds.

Consequently, we have decided that a more gradual introduction of sounds and letters would be easier for the teachers and the children. With this memo you are receiving a chart which shows that approximately one sound or rather phoneme-grapheme correspondence should be taught with each preprimer lesson (a lesson is 4 pages of preprimer and activity book pages accompanied by teacher's manual unit for those 4 pages).

We are using the term correspondences rather than "sounds" or "phonemes" etc. because what you are teaching is the correspondence between a phoneme (the speech sound) and the grapheme (how it is written).

Our general plan is to teach about 55 correspondences by the time we finish the preprimers which for fast groups may be around Thanksgiving. This is introducing correspondences at about one or two per preprimer lesson. By teaching the correspondences what we are suggesting is that the teacher make a chart for each correspondence and use the words in writing lessons.

Don't panic about making the charts. All they are is a letter plus four words written on a sheet of tag board (an open file folder is about the right size and weight). To this you should add a few pictures which you instruct the children to bring in from magazines. You will receive an extra preprimer to cut out a picture of Bill, Linda, Rags, Midnight, Mother and Daddy for your charts.

Leave the chart hanging on the wall after you have taught from it to use for review and writing lessons. In fact, I suggest you leave the charts up for weeks and weeks, adding one at a time and having the children review them in reading group and for seat work. If a child forgets a word during reading lesson ask him what sound the word begins with and if he doesn't remember, refer him to the chart and let him look at it. The picture should recall the sound the letter (grapheme) makes. The same procedure should be followed when the child is reading silently and asks you for a word. He should be told to look at the chart on the wall and read the sound or sounds in the word. Hence your walls become a kind of temporary sound dictionary. Your room might look a little messy (or charty) but never mind, the purpose of this experiment is to make these children good readers. Do not change the place of the charts as children will remember location and refer to it. Do not of course put up a chart until you are ready to introduce it in reading group.

Additional Teaching Suggestions

1. Children should be encouraged to read the charts in their spare time alone or helping each other in pairs.

2. They should be encouraged to use these words in penmanship and story writing.

3. Art lessons might require the student to draw a picture for some of the words and then label it.

4. You may wish to have the children make an individual chart for themselves to keep at their desk. Children should copy diacritical marks in making charts but need not write diacritical marks in writing stories.

5. Sound games (teacher calling three sounds the same and one different) should also be played with these sounds as introduced.

6. Writing lessons should use at least the "key word" and letter being taught in the correspondence. Key words are the word from the preprimer text that illustrates the correspondence.

DMS CHARTS FOR 2nd PRE PRIMER "HERE AND NEAR"

1st Pg. 3-6	N n Nest near Nurse not	2nd Pg. 7-11	P p Penny play Paint party
3rd Pg.11-14	V v Valentīne very voice visit	4th Pg.15-18	Y y baby funny Daddy party
5th Pg.19-22	U u Umbrella up Usher us	6th Pg.23-27	G g Girl gō Garden green
7th Pg.27-30	O o Ox on Octōber olive	8th Pg.31-34	I i Indian is ink it
9th Pg.35-38	Y y Yellow yes Yard year	10th Pg.39-42	K k Kitten King key keep
11th Pg.51-54	J j Jar jump jacket just	12th Pg.47-50	X x box axe six ox

Gee! Look at All The Fuss in London

Under the area of dissemination which is a part of this contract there has been a little transatlantic debate going on in The Times (London) Educational Supplement.

In July of 1965, the Principal Investigator Dr. Fry went to the London Reading Conference and presented a paper giving some of the preliminary research findings.

Round 1

On about October 1st the Times printed a rather long summary of the paper presented at the London Reading Conference. This information was accurately reported and essentially contains the information found in Level 4 explaining the DMS and its rationale plus a brief report of early research findings. These findings essentially were that on the Paragraph Meaning subtest of the Stanford Achievement Test there were no significant differences in classes taught for one year in each of the three methods DMS, ITA, and TO.

Almost before the ink was dry, a reply was submitted by John Downing, England's chief researcher in the ITA method.

Round 2

Letters to the Editor:

Sir:

Your report of Dr. Fry's paper on his experiment in New Jersey comparing his Diacritical Marking System (D.M.S.) with the Initial Teaching Alphabet (i.t.a.) and with Traditional Orthography (t.o.) glosses over serious flaws in the design of his research.

You say, "after a few months the classes were given the same test". Usually by "the same test" one means that the test measures the same ability under parallel conditions. Dr. Fry's test did not provide such parallel conditions. All the children were tested in t.o. but only the t.o. group had been learning to read in t.o. The other two groups were learning D.M.S. and i.t.a. respectively. Thus, the t.o. test could not be a valid criterion of their ability in reading per se. It is hardly surprising that the t.o. group "had a very slightly higher reading score". What is surprising is that Dr.Fry should conclude on the basis of testing i.t.a.learners with a test in t.o. at this very early stage that "none of these methods is significantly superior or significantly inferior".

The use of the word "methods" in this context is indicative of an even more serious error in Dr. Fry's design--an error common to all i.t.a. experiments so far reported in the United States. He and several other American educational research workers have mistakenly seen i.t.a. as a teaching method whereas, in fact, it is a medium or writing system for English which may be taught by any of the usual methods of teaching reading. This misconception led Dr. Fry (and others) to disregard a vital variable in reading research--the content and methodology of the materials of beginning reading instruction. In his experiment, Dr. Fry compared the Mazurkiewicz and Tanyzer Early-to-Read series printed in i.t.a. with the Sheldon Readers printed in t.o. The content and teaching methodology of these two series is very different, and, therefore, any results obtained must be meaningless so far as a comparison of i.t.a. with t.o. is concerned.

In the British research on i.t.a. in our original experiment of 1961 and in the replication study begun in 1963 both the i.t.a. experimental and the t.o. control groups of children use the same basal reading series (Janet and John) and are tested on the same tests--one group having their books and tests in i.t.a., the other group having them in t.o. The only American experiment to apply this rigorous control over the variable of content and methodology is that recently begun by Dr. Helen Robinson at the University of Chicago in which the experimental group are using i.t.a. editions and the control group t.o. editions of the same Scott, Foresman basal readers.

John A. Downing.
Reading Research Officer.
University of London Institute of Education.

Round 3
(Letters to the Editor)

The Times Educational Supplement
Printing House Square
London, E. C. 4, ENGLAND

October 20, 1965

Dear Sir:

Perhaps your readers with an interest in i.t.a. will be interested in how Mr. John Downing has been changing his tune. In a letter to you appearing October 15, criticizing my experiment which in part found no difference between i.t.a. and t.o., he states "the t.o. test could not be a valid criterion of their ability in reading per se. It is hardly surprising that the t.o. group 'had a very slightly higher reading score'.

In reply I would simply like to quote from Mr. Downing's own article in the 1963 Proceedings of the International Reading Association: "We have recently tested all the experimental i.t.a. pupils in seven classes on their ability to read the conventional alphabet and spelling, although not more than 40% of them had been taken off i.t.a. books by their teachers at this time ..... The most important fact which emerges from these tests is that the i.t.a. group achieved significantly higher scores for accuracy and comprehension in reading the conventional alphabet and spelling." (Downing's italics.)

In short, Mr. Downing's 1963 report of research was not confirmed.

We are continuing our research by testing the i.t.a. children at the end of this year when they will all have transferred out of i.t.a. and this should answer a further criticism.

As long as we are having a little transatlantic experimental design criticism (which I consider healthy), many Americans, including myself, find that the major flaw in the British i.t.a. experiments is the lack of control for the Hawthorne effect.

This means that any time you take a new and different method and have it taught by volunteers with the results compared to the old method taught by non-volunteers (regular classes), the new method always wins due to the quality of novelty, not some inherent value in the method. We attempted partly to control this by having all teachers volunteer for the experiment and then randomly assigning them to method groups so that t.o. had an equal number of eager volunteers.

The DMS was also partly used as a control for the Hawthorne effect - it was another new method, so that we were comparing a new method with a new method.

The reason that we selected the i.t.a. materials used in the project is very practical. The largest selling i.t.a. materials in the United States are those written by Drs. Mazurkiewicz and Tanyzer and published by a subsidiary of Pitman Publishing Company. This organization has a large promotional effort directed at American schools and they strongly infer, if not directly state, that their i.t.a. materials are definitely superior to traditional methods. One of the things we want to know is whether this superiority claim, which is partially backed by citing Mr. Downing's research, is true.

What this research discussion adds up to is that persons responsible for making major decisions in education, such as whether or not to change a beginning reading system, had best take a cautious route. I am personally disappointed with many British and American educators who seem to operate on little more than "testimonials" and who are so eager to have anything "new" that they cannot wait for solid and replicated research to confirm opinions.

It is indeed good that Sir James Pitman, Mr. Downing at the University of London, and many school systems are interested in better ways to teach reading. But let us not confuse research with the main line of educational responsibility.

Finally, I hope that neither the public, not the establishment, nor the education profession will overlook an extremely significant and indisputable fact, reconfirmed by my experiment, that nothing is as important as a good teacher. A good teacher using any method (the worst method) gets so much better reading results than the best method with a poor teacher.

Sincerely,

Edward Fry, Ph.D.

Round 4

November 10, 1965

The Times Educational Supplement
Printing House Square
London, E.C. 4, ENGLAND

Dear Sir:

For your readers who are interested in the great ITA versus TO (regular) beginning reading method controversy, a very significant bit of information has just been published in a small professional journal.

Dr. Albert Mazurkiewicz of Lehigh University reporting in the current issue of The Journal of The Reading Specialist, October 1965), found that after two years, that is the end of the US second grade; there was no significant difference between 387 children taught by ITA and 803 children taught by TO on the California Reading Test (comprehension section). This confirms his earlier report at the end of first grade with 196 matched pairs. In his own words "neither advantage or disadvantage can be inferred for either population (in) relation to reading skill".

Since this also confirms my report at the last University of London Reading Conference and some might hear that there is an American prejudice against ITA, let me hasten to remind you that Dr. Mazurkiewicz is the senior author of the largest selling ITA series in America published by Pitman Publishing Company.

One can't help but wonder how widely this finding will be quoted by book salesmen and the popular press.

Will the Ford Foundation which sponsored this study and seemed to outdo itself in getting articles about ITA in so many US popular publications before the results were known be just as eager to publicize that after two years it doesn't make any difference in reading skills whether you use ITA or TO?

Sincerely,

Edward Fry, Ph.D.

Round 5

November 26, 1965

The Times Educational Supplement
Printing House Square
London, E. C. 4,

Sir,--Dr. Fry's letter in your issue of November 19 surely carries selective reporting too far--even for someone who is competitely advocating his own alternative system (namely his Diacritical Marking System).

His letter to you suppresses all the (many) favourable other comparisons from the article which he has quoted. He further selected only one of three units in the one of several tables which he thus chose, suppressing even the other units in that table--which did not happen to suit his book. Finally in his presentation he implies that this chosen excerpt shows that i.t.a. may be dismissed as valueless. That is not a permissible inference. The i.t.a. children held their own even in that one section, their results being at least as good. Thus even that one comparison does not negative the overwhelmingly favourable comparisons in all other tests and in all the tables.

I enclose the Second Annual Report of the Lehigh University-Bethlehem Area Joint School System Demonstration and Evaluation Projects Use of the Initial Teaching Alphabet in Reading Instruction which is the main report, also by Dr. Mazurkiewicz, upon which he based the particular article in The Journal of the Reading Specialist from which Dr. Fry has thus selectively quoted, and I suggest that you should review both of these in your columns, so that your readers may have "the whole truth" without any such selective suppressions by opponents of i.t.a.--or undue emphasis by me!

JAMES PITMAN
The Initial Teaching Alphabet Foundation, 39 Parker St.w.c.2.

Round 6

November 30, 1965

Times Educational Supplement
Printing House Square
London E.C. 4 England

Dear Sir:

I am sorry if Sir James Pitman feels that I am doing selective reporting about ITA studies, but in the mass of information available about reading, one must either be selective or incomprehensible.

In selecting the reading comprehension scores from Mazurkiewicz study which showed no difference after transfer; I did so because I honestly believe that reading comprehension is the most important part of any reading test. Why read if you don't understand the material? The vocabulary subtest (the only other score reported) was omitted because I am interested in reading ability and in any event spelling is a by-product of the study not a main factor which is controlled.

But just so your readers will not feel that I am trying to hold back vital information, the scores which Mazurkiewicz reported when translated into grade level by the appropriate test manual show that at the end of two years instruction and transfer in vocabulary, the ITA group was one tenth of a year ahead of the TO group and on the spelling test they were ahead by three tenths of a year.

In any event, I certainly did not wish to imply that ITA is inferior to traditional approaches. The evidence is that it can teach reading just as well as any other system.

As for Sir James' unfortunate charge that I am "competitively advocating" my own Diacritical Marking System; alas, if he will but read either the Times report or the complete speech which will appear in the Proceedings of the London Reading Conference, he will see that there are no significant differnces reported for it. We are currently trying to improve it but right now I trust that we are making suitably cautious statements.

The principle of phonetic regularity for beginning readers certainly makes common sense, but these darn research facts have a way of making common sense a little less sensible. Education is at the interesting cross over point; it still relies more on testimonials and feelings than data, but data is gaining.

The results of more ITA research studies conducted under U.S. Office of Education's auspices last year are beginning to be made known.

Dr. Guy Bond of the University of Minnesota, who holds the coordination contract and has partially analyzed the data from all the studies, stated at the recent meeting of the National Council of Teachers of English that "There was no outstanding method for teaching beginning reading for all children". Besides the 5 studies involving ITA (Fry, Hayes, Hahn, Mazurkiewicz, and Tanyzer) other studies included various basal, phonic, and linguistic approaches.

The ITA study by Dr. Robert Hayes, Supervisor of Research at the Department of Public Instruction of the State of Pennsylvania (located in Harrisburg) is perhaps worthy of further comment. He found "statisticly significant" differences favoring ITA over the traditional basal reader. But "statistical significance" is not always meaningful to the classroom teacher. If we take the Paragraph Meaning test on the Stanford Achievement Test which I think is the best measure of reading ability (as opposed to recognizing words in isolation or Vocabulary Meaning which is a type of IQ test), Hayes found that at the end of the first grade ITA pupils received a grade score of 1.9 and traditionally taught pupils received 1.7. From national norms on this test given at this time of year, we would expect the children to be reading at 1.8; a score of 1.0 would be the beginning first grade and 2.0 is normal, for beginning 2nd grade. One tenth of a year's achievement better than national norms is not quite the improvement we were lead to expect from ITA.

This data pretty well confirms my earlier reports so at least educational researchers have mastered one criterion for scientific research, that of replication or independent verification.

As these reading studies are beginning to appear, we still hear some ITA proponents state, "Well at least ITA is better for teaching beginning writing". Let me hasten to add that I know of no large scale study designed to compare ITA writing achievement with traditional writing achievement. When writing achievement is reported as a by-product of a reading study it must often not be taken seriously as the type of writing instructions and controls given each group are usually not the same.

Last but not least, I am not altogether happy at being cast in the role of ITA critic. I am intrigued with the concept of better writing systems and personally, I both like and admire Sir James Pitman. But the state university pays my salary partially to critically examine new ideas in the field of reading, and my professional colleagues expect me to form opinions on something more than pleasant associations. Hence my present position is to strongly advocate more careful research using ITA, but to disapprove large scale adaptions and change-overs from TO. Incidentally, I do not think that a school "just trying out ITA" for a year or two will prove anything.

Sincerely,

Edward Fry, Ph.D.

De Formal Stuff for Dem Government Folk

Problem

This project was one of 27 coordinated studies sponsored by the U.S. Office of Education to investigate methods of first grade reading instruction. The three methods investigated in this study are: The Initial Teaching Alphabet using the Mazurkiewicz and Tanyzer _Early to Read_ series; the Allyn and Bacon basal reader series known as the Sheldon Readers; and a new system known as the Diacritical Marking System which used the Sheldon Readers with diacritical marks added to make the words phonetically regular.

Hypothesis

There are no significant differences among the results of these three methods of reading instruction.

Related Research

Most of the research involving the ITA has been done by Mr. John Downing of the Institute of Reading Research at the University of London. In general, Mr. Downing has found that the ITA, when used in beginning reading instruction, greatly increases reading ability over traditional methods. These findings are reported in a number of places; two prominent reference sources would be Mr. Downing's book _The Initial Teaching Alphabet_ published by the Macmillan Company, New York, 1964, and in Mr. Downing's article "Experiments with Pitman's Initial Teaching Alphabet in British Schools" which appeared in the 1963 _Proceedings of the International Reading Association_. Another major British source of information on this subject is found in Maurice Harrison's book _The Story of the Initial Teaching Alphabet_ published by Pitman Publishing Company, London, 1964.

The only major United States study of the ITA prior to the current series of studies is the Ford Foundation sponsored project by Dr. Albert Mazurkiewicz at Lehigh University. Interim Report #9 has been referred to elsewhere in this study. In general, it found no significant difference favoring the ITA or the TO group after two years of instruction, using the Comprehension Section of the California Reading Test. The Vocabulary Section of the California Reading Test showed a very slight superiority for the ITA taught children. The spelling section of the Stanford Achievement Test, which was the only other test reported, gave a small but statistically significant superiority to the ITA taught children.

Though it is difficult to compare two studies in two different countries, in general Mazurkiewicz does not report the large superiority for ITA groups that British reports most uniformly feature. Mazurkiewicz Interim Report #9 appeared in The Journal of the Reading Specialist, October, 1965.

In addition to the formal studies mentioned above, a number of schools have "tried out" the ITA and have produced a rash of glowing testimonials [illegible] its effectiveness. Though not experimentally controlled, these studies indicate that the ITA can certainly teach reading. The major problem of this study then is not to prove that the ITA can teach reading, but to see if it teaches reading better than the traditional method or another method such as the Diacritical Marking System which also increases phonetically regularity.

Shortly after beginning this study the author was asked to do an article entitled"New Alphabets" for a Perspectives in Reading monograph of the International Reading Association. This article which is in press clearly points out that there is nothing new in "new" alphabets. To give but two examples John Hodges had a system of diacritical marks for teaching beginning reading in 1644. Benjamin Franklin proposed a new and augmented alphabet in 1768. The present ITA was developed by Sir James Pitman in the latter 1950's, but his grandfather Isaac Pitman had a new phonetically regular augmented alphabet called Fonotypy in 1844. Though Isaac Pitman's books in the Augmented Alphabet were actually published as were a diacritically marked set of readers by Ward Edwards. (Silver Burdette 1894) Neither of these systems were successful enough to stand the test of time.

At present there are a number of reading systems that emphasize phonetic regularity. There are other new alphabets such as John Malone's Unifon and a host of revised spelling systems such as those designed by Godfrey Dewey. Even the so-called "linguistic approach" often relies heavily on the selection of phonetically regular words. Since there is no clearly established superiority for any of these systems, it is hoped that some of the 27 first grades studies being conducted this year can supply some of the answers.

Procedure

Three methods of beginning reading instruction were compared, using 21 first grades in three school districts in central New Jersey. Two of the methods are concerned with devices which yield a more regular phoneme-grapheme relationship while one method which might be thought of as a control, uses a traditional basal reading series. These methods are as follows:

1. DMS. A Diacritical Marking System was applied to a basal reading series. The marks were applied to all the words in the regular preprimers, primers, first-reader texts and accompanying activity books. In addition to this, the teachers used diacritical marks on the material they wrote for the children. These marks tended to make the phoneme-grapheme relationship much more regular (estimated to be over 99% regular as opposed to approximately 60% regularity for standard spelling). The marks have the advantage of preserving traditional word form and spelling. The regular teachers manuals for the basal series (Sheldon Readers) were used, and in addition to these lessons were supplemented with instructions for teaching the diacritical marks.

2. TO. A basal reading series in Traditional Orthography formed another experimental or control group. This is the same series (Sheldon Readers) that was used with the Diacritical Marking System. The teacher were instructed to carefully follow the teachers manuals. Equal supervision time was given to this group, and the teachers for this group were randomly selected from the same population as the other two groups.

3. ITA. The Initial Teaching Alphabet was used in the Mazurkiewicz-Tanyzer Early to Read Series. This system was developed by Sir James Pitman and has had a moderate amount of research in England and America. It attempts to give greater phonetic regularity by adding 16 new characters to the alphabet and changing the spelling rules.

In all three groups the children were taught reading from the first day of the 140 day teaching period. No time was allowed for "reading readiness" activities. For example, in the basal reader series this meant that the teacher began with the first page of the first preprimer on the first day of instruction.

Teachers were not shown reading readiness tests scores and were instructed to group their children according to observed reading ability. This meant that children were assigned at random to reading groups for the first few weeks, and as the superior readers emerged they were changed to a top group with middle readers going to a middle group and the slow readers to a slow group.

Efforts were made to see that there was equal instruction time in all method groups, but this was very difficult. All instructors were told to spend a minimum of an hour a day specifically on reading instruction. Perhaps the best control on over-teaching of reading was the fact that in two of the three districts (each of which had an equal number of all three methods groups) first-grade teachers were also introducing a new math program which required a moderate amount of time. We felt that this was a healthy development as it kept teachers from teaching reading all day long. A difficult and uncontrolled factor came up in the teaching of writing. The ITA series had specific instructions for a rather heavy emphasis on children's writing (or a modified language experience approach) while the other two methods had no specific instructions about the teaching of writing. Teachers in those groups followed the regular school district policy. The same was true of spelling.

More specifically ITA groups were instructed in their teachers manuals to strongly encourage the children to write stories and to pay relatively little attention to spelling accuracy. In other words the volume and creative aspects of childrens writing were specifically emphasized in ITA classes.

Supplementary reading materials in the classroom were also a moderate problem. Each classroom had a small in-class library. Getting a library of approximately 50 books was no problem in each of the TO classes. In the ITA classes the project purchased for the school district a number of supplementary consisted of about 25 books in ITA at the first grade level. In addition, the school district supplied some first grade and pre-first grade (no words) books for the classroom library. Particularly in the second semester it was observed that many children read the non ITA books with facility even without instruction in transferring from ITA to TO. In the DMS classes supplementary books were a greater problem. Three small books using DMS for beginning first grade materials were written by one of the project teachers, duplicated and circulated. In addition, the project selected some "linguistic books" which used mostly phonetically regular words. But the bulk of the books in DMS classroom libraries were books written in TO. This seemed to cause little or no problem for the children.

Supplementary lessons for the DMS are discussed in greater detail elsewhere in this report, but basically they consisted of having the teacher present a small chart with a picture and key word plus two or three other words using the same sound. Approximately one sound-symbol relationship was taught along with each preprimer lesson. Children were not expected to gain mastery of the sound-symbol relationships on the basis of a first presentation, so the presentation was repeated during the latter half of the primer. Even then, complete phonetic mastery was not achieved by all children, but many children learned many of the sound symbol correspondences.

The project had a full-time supervisor and a quarter-time supervisor. Each teacher in each method group was visited approximately once every two weeks during the year with the greater frequency of visits in the first few weeks. Prior to the beginning of the school year all teachers attended a one day workshop with ½ day devoted to the specific method which they were teaching. All teachers were given a teachers manual for their particular method in the summer. Several weeks after the instruction began, workshops were held for ½ day with experts in each of the three methods. Dr. Mary Austin, a co-author of the Sheldon Readers, talked to the TO group; Dr. Albert Mazurkiewicz talked to the ITA teachers; and Dr. Edward Fry talked to the DMS teachers.

The number of children in each of the classrooms was somewhat below the national average. Our largest classrooms had about 28 pupils, while the smallest had 16. The median size of the classrooms was 24. See Table 41. The children in the project were basically middle class but there was a sprinkling of low income and minority groups. See Table 42 Nearly all of the children had attended a full year of kindergarten. New Jersey state policy provides that no formal reading instruction shall be given in kindergarten. The average age of the children was 76.5 months. See Table 20. Initial screening with the Detroit Word Recognition Test and the Gilmore Oral used on a sub-sample showed that very few of the children entered first grade with measurable reading activity. (See Table 13)

Teachers were asked to volunteer for the project. They could not select the teaching method. After the teachers had volunteered for the project they were randomly assigned to a method group by pulling slips of paper out of a hat. The children were assigned to the teacher by the principal in the same manner that the district had always followed.

Analysis of the Data and Findings

There were no significant differences between the three methods groups on any of initial parts or total scores of Pintner Cunningham IQ Test, the Murphy-Durrell Reading Readiness Test, or the Metropolitan Reading Readiness Test. See Tables 1 to 14.

In December the first informal reading test was given to all groups. It was a test developed by the principal investigator known as the Instant Word Recognition Test. This test consisted of a list of five choice items consisting of words selected in an ascending order of frequency from among the commonest 300 words in English. The teacher read a word aloud, and the child marked one of five choices. There were no significant differences between the 3 methods groups. See Table 16.

The major reading test given at the end of instruction was the Stanford Achievement Test primary 1 battery. This test was given after exactly 140 days of instruction for each classroom. Testing times were staggered a little for each class so that the test could be administered by members of the project staff or specially hired university personnel. The classroom teacher was present during the test administration, but did not conduct the test. There was no significant difference between the scores of any of the methods groups on any of the reading or spelling subtests on the Stanford Achievement Test. This is probably the most important finding of this study.

A slight clarification should be made regarding the spelling test, as the "no difference" applies only when ITA children were allowed to spell in ITA. If ITA children's papers were scored by TO standards, they were significantly inferior.

The significance test used was an Analysis of Variance using the classroom as a unit.

A subsample of about 40 children in each method group was also given 4 oral tests and some scores were also obtained on a writing sample administered to these children.

The Gilmore Oral Reading Paragraphs were administered and accuracy score showed the DMS children to be reading at grade level 2.5, TO children at 3.1, and ITA children at 2.7. These differences were not sifnificant. It is interesting to note that these scores are about a year higher than Stanford reading scores. One possible explanation is that the Stanford test was published in 1964 and the Gilmore was published 12 years earlier in 1952. It is possible that children are now reading better, particularly those in an experimental project which allows no time for readiness activities.

The Gilmore comprehension section was not given but rate was recorded and TO children read a little faster but not significantly so. See Table 26.

In an attempt to have a different and possible purer phonic test than the Stanford Word Study Test, the 27 project directors appointed a committee to develop an oral phonic test. One such test was submitted by consultant Bijorn Karlsen of the University of Minnesota but the committee felt that it was not as purely phonetic as it should be and accordingly the author developed a list of phonetically regular words arranged in rough frequency of vowel sounds. These words had high phonetic regularity but low frequency of occurance. Thus it was hoped that most of the words would not be in the child's sight vocabulary and in order to pronounce them aloud he would have to use phonetic skills. A sample of this test can be seen in Table [illegible]. When administered to the subsample population the ITA pupils were statistically superior to the DMS pupils. This was the only statistically significant difference in any reading test.

A writing sample was also administered to the subsample population. Children were allowed to write on any topic for a 15 minute period. Their papers were scored in the following ways:

> Writing Mechanics: This was the ratio of correct usage of punctuation, capitalization, and indentation to the number of times correct usage was required. When the ratio was converted to a percent of accuracy the DMS mean was 55.1, the TO mean was 61.0 and the ITA mean was 33.0. The ITA group was significantly inferior at the .01 level.
>
> Spelling: The percent of accuracy was computed (Table 24) and the DMS group was significantly inferior. ITA spelling was allowed for ITA children.
>
> Total Number of Words: The ITA children wrote significantly longer stories. See Table 24.

A word of caution is in order about the writing sample as this research study made no effort to control writing instruction. The ITA Early To Read series has specific writing instructions included, in fact emphasized, while each of the other two reading methods made no mention of writing instruction and the teachers used whatever method was common to their district or training. DMS children were not required to make diacritical marks when they wrote,though some chose to do so.

Conclusions

It doesn't seem to make much difference how you teach a child to read. All methods seem to yield about equal results on silent and oral reading tests at the end of a year's instruction.

ITA children seem a little better in attacking phonetically regular words but if this skill was tremendously important to the total reading process, it should have shown up on tests like the Stanford.

ITA children seem to write longer stories. This could be a function of the type of writing instructions (a modified language experience approach). This is worthy of further study but caution should be exercised in making a firm statement that ITA produces better writers as this could be a function of instruction factors rather than the alphabet used.

ITA children may have been penalized in having to take their reading tests in TO though this is by no means certain. Retesting of these children at the end of second grade when practically all of them will have transferred should provide a more conclusive answer to this problem. This will be done.

The differences between classrooms is startling. These differences are much greater than between methods used. This certainly points the finger at the importance of the classroom teacher as sometimes classes with the same IQ and socioeconomic background and the same reading method had wide differences. As educators have known for a long time, there is nothing like a good teacher but the disappointing factor is that once discovered--how do bad teachers remain in the profession?

The DMS method had never really been used before in a full scale tryout comparable to this. Earlier usages had been strictly supplemental in a remedial reading situation. It is marvelous that the school districts allowed us to use it and at least their faith was justified in that these children could read as well as the other groups at the end of the year. This group had certain inherent handicaps such as books printed without color pictures, a lack of supplementary materials, and a shortage of coordinated instructions in a teachers manual or workbook. None the less, we have gone "back to the drawing boards" and a revised DMS method is being tried on 7 new first grade classrooms. But that is the story for another report--this one is long enough.

When we regroup reading achievement scores on the Stanford Paragraph Meaning Test by sex and age into the three methods groups we can ask some interesting questions. The following answers to questions are based on Table 24. The age groups were divided into younger, middle, and older thirds based on the standard deviation of the total polulation.

Is any method superior for all children?

This is the same question asked earlier and the answer was "no" when an analysis of variance was done by using classroom means, though there was a tendency to favor the TO method. Table 24 shows that TO was significantly superior at the .05 level of confidence. The reason for this difference in interpretation of significance is because Table 24 uses a more sensitive analysis of variance because the analysis takes into account sex and age grouping as well. Also, Table 24 uses individuals as the unit and earlier work used the classroom as a unit. However, if the reader will recall, the TO group also had a slightly higher IQ, and as might be suspected and as will be shown in Table 25, the higher the IQ the better the reading achievement.

Can girls read better than boys?

If IQ is disregarded, the answer is yes. Perhaps we had better state this a little more formally. There is a significant difference between the mean reading achievement scores when boys in all methods groups are compared with girls in all methods groups, favoring the girls at the .01 level of confidence using an analysis of variance taking into account only method, sex and age.

Can older first-graders learn to read better than younger first-graders?

No, not within the narrow age limits from which this population was selected, and if difference between sexes are not considered.

Is any method better for boys than it is for girls?

No. See Sex by Method Mean Squares.

Is any method better for younger students than it is for older students?

No. See Method by Age Mean Squares.

Do both boys and girls perform the same for all age levels of this polulation?

No. See Age by Sex Mean Squares. This is a little surprising and is the only interaction with significance. By looking at the means, we see that as the girls get older, they score higher. This is what one would expect. But as the boys get older, they score lower. One possible explanation is that there may be an IQ difference between the older boys and the older girls. Another possible explanation is that the older boys group contains a number of cases who have been held back and therefore represent in part a population with a history of difficulty in learning to read.

In Table 25 we have grouped the students by IQ, sex and method, then analyzed these groups by analysis of variance. The IQ groups were divided into brighter, average and duller thirds based on the standard deviation of the total population.

Here we find, not too surprisingly, that brighter children learn to read better. This effect is significant at the .01 level.

What is surprising is that the main effect that we found for sex (girls reading better than boys) disappears with this grouping. The differences between Table 24 and Table 25 are partly due to the fact that we are working with unequal numbers in the cells. In other words, some of the cells had many fewer cases than other cells. This tends to give unequal weight of any single score to a mean, and this unequal weight, of course, carries over into the mean of the means. It might also be partly due to the fact that IQ was taken into account in this analysis.

That the difference in main effect for method disappeared is not too surprising as it was only at the .05 level in Table 24 and it did not show up when the students were grouped by classes which had something approaching equal numbers.

In addition, what this analysis tells us is that no one method was found significantly superior for brighter children or duller children. No method was statistically superior for brighter boys in contrast to duller boys or brighter girls as opposed to duller girls.

Conclusions and Implications

The main conclusion of this study is that it doesn't seem to make much difference which method, DMS, TO or ITA is used to teach beginning reading. In a number of the tests, TO came out slightly but usually not significantly higher, but it must be remembered that the TO group also had a slightly higher IQ.

The implications for this are simply that schools expecting to find a panacea in some new method such as the ITA will simply have to keep looking. In the meantime, they can continue with their traditional method and do just as well as they would by spending the money to adopt a new system.

The only seemingly clear cut effect that we found by our analysis of variance by sex, age and IQ groupings was that brighter children of either sex learn to read better using any method.

If we dig down a little we can find some differences. For example, ITA students read words in isolation (particularly if they were phonetically regular words) better than the other students. But, if this is so valuable, why didn't it help them to read and understand a paragraph any better? On the other hand, ITA students had worse spelling in TO at the end of first grade. This might be expected, and even though they were significantly inferior in TO spelling they were normal using ITA spelling. Hence, spelling ability is something to look at more closely next year when transfer in reading and writing is supposed to be completed.

The most encouraging thing about ITA is that the children wrote longer stories. It is, however, completely unproven that this is a function of the alphabet used. It could just as easily be due to the type of writing instruction being given, for example, "Don't worry about your spelling, go ahead and write".

For future research there is much that could be done and some that is being done. Currently underway is a continuation of this study in which we will test all of these children again in December and in May of the 2nd grade using advanced forms of the Stanford as well as the oral tests.

Part of this on going study also is devoted to a refining of the DMS system. In the past year DMS children read from a "retread" series, namely the regular Allyn and Bacon book with DMS marks added (and color from illustrations removed by economics of photo reproduction). For the next try-outs of DMS, new books are being written which introduce words on a phonetically regular basis as well as a gradual scale. What this means is that whereas the Allyn & Bacon readers use words containing variant sounds of vowels in the first preprimer, our new DMS preprimers will use only short vowel words for a while, then gradually long-vowel words, then words containing less common sounds of vowels. Whether or not these new DMS materials and methods will make any difference we must wait a year to find out.

Finally, doing research under the slightly restrained conditions of having other people all agree on reading achievement measures, common instruction time, common punch card holes, etc. has greater benefits than drawbacks. We hope that there will be many more of these large coordinated studies. Educational research is too important, and getting too expensive, to have studies which can't be carefully related to each other. We are greatly encouraged by this trend. We found the amount of guidance and structure developed by our peers to be helpful, reasonable and stimulating yet it still left room for creativity, possible error and certainly extra work.

Level 7 TABLES

Look At All Them Purdy Numbers

For you cold hard scientists, here are a few bales of slightly refined data.

Most of the statements we have made in this report, including earlier tables, are all based on the tables in this section.

While we have commented on most of the tables and certainly we hope all the significant ones, we were required to collect more data than we really needed by a joint decision of all 27 project directors. Hence, these tables contain practically all the required data collection.

For certain measures such as the Carlson Phonic Word Test and the San Diego Attitude Inventory, the collection requirement was not manditory, and we decided not to use them. Other measures such as the Thurstone Pattern Copying we did not use much, though the data is here for future researchers.

All of the data reported here in tabular form is available on duplicate sets of punchboards at cost from Dr. Guy Bond at the University of Minnesota, so if our statistics or particular combinations are not to your liking we invite you to do your own.

Table 1
(September)
Murphy-Durrell Reading Readiness Analysis 1964

Mean Total Raw Scores on Phonemes Test

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
12.4	11.4	2.7	18	44.	0.	44.
13.6	9.1	2.3	16	37.	0.	37.
20.1	11.5	2.7	18	42.	2.	40.
21.0	13.1	3.0	19	42.	0.	42.
15.7	12.3	2.6	22	43.	0.	43.
30.9	11.0	2.4	21	46.	11.	35.
24.9	14.3	3.4	18	45.	0.	45.

D.M.S. Mean = 19.9

T. O. Classes

15.7	10.4	2.9	13	37	3	34
22.5	13.4	2.6	26	49	0	49
22.5	10.1	2.1	22	40	3	37
21.7	15.2	3.9	15	48	2	46
16.6	16.0	4.0	16	47	1	46
20.1	14.5	3.7	15	49	0	49
26.9	13.1	3.0	19	45	7	38

T.O. Mean = 22.0

I.T.A. Classes

16.5	9.6	2.0	22	40	3	37
10.6	10.1	2.5	17	34	3	31
10.4	14.3	3.5	17	43	0	43
22.0	12.0	2.4	24	48	1	47
20.7	10.3	2.1	24	45	10	35
26.7	13.5	2.9	21	48	5	43
19.0	10.6	2.9	13	37	5	32

I.T.A. Mean = 21.4

Analysis of variance between group means: not significant.

Table 2
(September)
Murphy-Durrell Reading Readiness Analysis 1964

Mean Total Raw Scores on Letter Names Test

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
23.3	12.1	2.9	18	47	9	38
26.6	12.6	3.2	16	49	8	41
23.8	12.7	3.0	18	43	7	36
26.1	12.9	3.0	19	47	3	44
27.3	14.1	3.0	22	50	1	49
35.9	11.2	2.4	21	51	9	42
27.3	13.9	3.3	18	48	6	42

D.M.S. Mean = 27.2

T.O. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
26.2	14.0	3.9	13	45.	0	45
35.4	14.3	2.8	26	51	5	46
33.0	12.1	2.6	22	51	10	41
29.0	15.9	4.1	15	49	5	44
34.6	15.2	3.8	16	52	6	46
35.7	13.3	3.4	15	49	10	39
37.3	9.9	2.3	19	50	18	32

T.O. Mean = 33.0

I.T.A. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
23.2	13.6	2.9	22	46	0	46
30.1	11.9	2.9	17	47	11	36
20.6	13.0	3.2	17	49	7	42
28.0	14.0	2.9	24	50	0	50
35.3	12.1	2.5	24	51	12	39
30.9	16.3	3.6	21	50	0	50
37.1	11.5	3.2	13	50	17	33

I.T.A. Mean = 29.4

Analysis of Variance between group means: not significant

Table 3
(September)
Murphy-Durrell Reading Readiness Analysis 1964

Mean Raw Score of Learning Rate Test

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
D.M.S. Classes						
6.5	3.6	.8	18	14	0	14
6.1	2.3	.6	16	10	2	8
9.7	2.4	.6	18	13	3	10
9.3	4.3	1.0	19	23	4	19
6.0	2.8	.6	22	12	0	12
7.5	4.2	.9	21	18	1	17
6.4	3.4	.8	18	14	0	14
D.M.S. Mean = 7.5						
T.O. Classes						
8.0	2.3	.6	13	12	4	8
7.0	3.3	.7	26	16	2	14
7.5	2.7	.6	22	13	3	10
5.9	5.4	1.4	15	18	0	18
8.2	3.9	1.0	16	16	3	13
8.6	4.7	1.2	15	17	2	15
10.0	3.2	.7	19	17	6	11
T.O. Mean = 8.1						
I.T.A. Classes						
6.2	2.4	.5	22	10	1	9
5.7	3.1	.8	17	12	1	11
7.0	3.9	.9	17	15	0	15
7.6	3.5	.7	24	15	1	14
6.9	4.2	.9	24	15	1	14
8.5	4.7	1.0	21	16	0	16
7.3	4.6	1.3	13	17	1	16
I.T.A. Mean = 7.1						

Analysis of variance between group means: not significant.

Table 4
(September)
Thurstone Pattern copying Test 1966

Mean Raw Scores

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
6.9	5.5	1.3	18	19	0	19
6.5	5.0	1.2	16	17	1	16
7.1	4.4	1.0	18	19	0	19
9.4	7.2	1.6	19	22	1	21
2.7	2.1	.4	22	6	0	6
6.0	4.6	1.0	21	13	0	13
2.9	3.2	.8	15	13	0	13

D.M.S. Mean = 5.9

T.O. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
9.0	5.0	1.4	13	22	4	18
10.5	6.1	1.2	26	26	0	26
7.0	5.9	1.2	22	28	1	27
8.4	5.0	1.3	15	15	0	15
6.8	5.0	1.2	16	18	0	18
3.5	3.9	1.0	15	14	0	14
4.6	3.1	.7	19	10	0	10

T.O. Mean = 7.2

I.T.A. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
7.0	5.0	1.1	22	15	0	15
5.3	4.2	1.0	17	16	0	16
9.0	7.9	1.9	17	24	0	24
6.1	6.2	1.3	24	21	0	21
7.3	5.2	1.1	24	20	0	20
1.3	2.0	.4	21	7	0	7
6.9	5.9	1.6	13	18	0	18

I.T.A. Mean = 6.2

Analysis of variance between group means: not significant

Table 5

(September)
Thurstone Identical Forms Test 1966

Mean Raw Scores

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
12.6	4.6	1.1	18	20	1	19
16.1	5.3	1.4	16	25	5	20
13.5	5.6	1.3	18	25	5	20
13.3	3.6	.8	19	19	8	11
13.6	6.7	1.4	22	25	0	25
17.4	5.6	1.2	21	26	8	18
23.1	13.0	3.1	18	34	4	30

D.M.S. Mean = 15.3

T.O. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
16.1	3.7	1.0	13	20	6	14
17.1	5.7	1.1	26	27	0	27
16.3	4.3	.9	22	23	5	18
13.3	7.1	1.8	15	27	1	26
10.6	7.6	1.9	16	20	0	20
10.5	7.3	1.9	15	33	5	28
19.8	7.6	1.8	19	32	4	28

T.O. Mean = 15.7

I.T.A. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
13.9	4.5	1.0	22	22	4	18
9.7	6.3	1.5	17	15	0	15
15.4	7.3	1.8	17	27	2	25
14.9	5.3	1.1	24	22	0	22
15.0	4.6	.9	24	23	3	20
20.6	10.0	2.4	21	37	0	37
15.1	6.7	1.9	13	26	5	21

I.T.A. Mean = 14.9

Analysis of variance between group means: not significant

Table 6
(September)
Metropolitan Readiness Test 1964

Mean Raw Scores on Word Meaning Test

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
			D.M.S. Classes			
7.6	2.9	.7	18	13	2	11
8.1	2.7	.7	16	12	4	8
8.5	2.3	.5	18	13	5	8
9.8	1.6	.4	19	13	7	6
7.9	3.0	.6	22	13	3	10
10.9	2.8	.6	21	16	3	13
10.9	2.6	.6	18	14	5	9
D.M.S. Mean = 9.1						
			T.O. Classes			
8.4	1.9	.5	13	12	6	6
8.7	2.9	.6	26	15	3	12
9.4	1.4	.3	22	12	7	5
8.3	2.8	.7	15	12	3	9
7.4	2.8	.7	16	14	4	10
10.1	3.0	.8	15	14	3	11
11.5	3.5	.8	19	16	6	12
T.O. Mean = 9.1						
			I.T.A. Classes			
9.0	2.6	.6	22	13	4	9
9.9	2.7	.7	17	15	5	10
6.3	2.4	.6	17	12	3	9
8.9	2.5	.5	24	13	4	9
9.3	2.7	.5	24	13	4	9
9.8	2.3	.5	21	14	5	9
8.9	1.8	.5	13	11	7	4
I.T.A. Mean = 8.9						

Analysis of variance between group means: not significant

Table 7
(September)
Metropolitan Readiness Test 1964

Mean Raw Scores on Listening Test

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
8.5	2.3	.5	18	14	4	10
9.0	2.6	.6	16	13	3	10
8.9	2.8	.7	13	13	2	11
10.6	2.5	.6	19	14	5	9
8.8	2.4	.5	22	13	4	9
11.0	2.2	.5	21	15	7	8
8.8	2.2	.5	18	14	5	9

D.M.S. Mean = 9.4

T.O. Classes

9.2	1.7	.5	13	12	6	6
9.1	3.2	.6	26	13	1	12
10.2	1.8	.4	22	13	7	6
8.8	3.5	.9	15	13	2	11
9.3	2.1	.5	16	13	6	7
10.1	2.7	.7	15	14	5	9
10.3	3.2	.7	19	18	3	15

T.O. Mean = 9.6

I.T.A. Classes

9.0	2.9	.6	22	14	2	12
9.5	2.9	.7	17	14	3	11
8.1	2.1	.5	17	11	4	7
8.6	2.0	.4	24	13	5	8
9.1	2.1	.4	24	14	4	10
9.2	2.0	.6	21	13	5	8
7.9	2.4	.7	13	11	3	8

I.T.A. Mean = 8.8

Analysis of variance between group means: not significant

Table 3
(September)
Metropolitan Readiness Test 1964

Mean Raw Scores on Matching Test

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
5.1	5.0	1.2	13	13	0	13
4.3	3.6	.9	16	11	0	11
7.5	4.6	1.1	13	14	0	14
6.7	3.0	.7	19	12	2	10
6.0	4.5	1.0	22	13	0	13
5.6	3.3	.7	21	13	2	11
6.2	3.6	.9	13	12	0	12

D.M.S. Mean = 6.3

T.O. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
6.5	3.5	1.1	13	13	0	13
6.3	4.2	.8	26	13	0	13
9.3	3.1	.7	22	14	3	11
5.9	4.0	1.0	15	11	0	11
6.9	3.5	.9	16	13	2	11
6.6	3.6	.9	15	12	1	11
5.6	4.5	1.0	19	10	0	10

T.O. Mean = 7.2

I.T.A. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
5.2	3.2	.7	22	12	0	12
5.2	3.0	.9	17	12	0	12
6.9	4.6	1.1	17	14	0	14
4.7	3.9	.8	24	13	0	13
9.6	3.0	.6	24	14	2	12
4.4	4.5	1.0	21	15	0	15
5.2	3.0	1.0	13	10	0	10

I.T.A. Mean = 5.9

Analysis of variance between group means: not significant

Table 9
(September)
Metropolitan Readiness Test 1964

Mean Raw Scores on Numbers Test

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
D.M.S. Classes						
10.5	4.4	1.0	18	18	4	14
10.2	3.7	.9	16	17	5	12
10.5	3.0	.7	18	16	6	10
10.7	4.4	1.0	19	19	2	17
9.5	3.8	.8	22	17	2	15
13.3	4.1	.9	21	19	5	14
9.3	4.0	.9	18	15	3	12
D.M.S. Mean = 10.6						
T.O. Classes						
11.2	4.5	1.3	13	22	4	18
11.5	4.6	.9	26	20	3	17
10.9	3.4	.7	22	17	6	11
10.3	5.9	1.5	15	19	0	19
11.4	4.8	1.2	16	20	6	14
11.3	3.6	.9	15	18	5	13
13.9	3.5	.8	19	19	9	10
T.O. Mean = 11.5						
I.T.A. Classes						
10.2	4.2	.9	22	18	3	15
9.1	3.0	.7	17	15	3	12
8.0	4.8	1.2	17	22	2	20
9.5	3.5	.7	24	16	2	14
12.8	3.4	.7	24	20	8	12
10.4	3.2	.7	21	15	4	11
7.8	2.7	.8	13	14	3	11
I.T.A. Mean = 9.8						

Analysis of variance between group means: not significant

Table 10
(September)
Metropolitan Readiness Test 1964

Mean Raw Scores on Copying Test

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
6.1	3.5	.8	18	12	1	11
4.9	4.2	1.0	16	13	0	13
6.1	4.4	1.0	18	13	0	13
5.5	3.2	.7	19	11	0	11
6.5	3.7	.8	22	13	0	13
8.9	2.5	.5	21	13	5	8
5.2	3.8	.9	18	11	0	11

D.M.S. Mean = 6.2

T.O. Classes

7.2	2.9	.8	13	12	0	12
7.5	4.3	.8	26	14	0	14
4.7	3.3	.7	22	13	0	13
7.3	4.8	1.2	15	15	0	15
7.2	2.6	.7	16	11	3	8
8.3	3.5	.9	15	14	1	13
9.1	3.9	.9	19	18	1	17

T.O. Mean = 7.3

I.T.A. Classes

6.0	4.3	.9	22	13	0	13
4.8	3.5	.9	17	10	0	10
6.5	3.7	.8	24	12	0	12
5.9	3.4	.8	17	12	0	12
9.2	2.4	.5	24	14	4	10
5.1	3.3	.7	21	12	0	12
6.1	2.2	.6	13	9	2	7

I.T.A. Mean = 6.2

Analysis of variance between group means: not significant

Table 11
(September)
Metropolitan Readiness Test 1964

Mean Raw Scores on Alphabet Test

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
6.3	3.4	.8	18	12	0	12
6.4	4.1	1.0	16	14	2	12
7.8	3.7	.9	18	14	3	11
6.8	3.8	.9	19	14	1	13
6.9	4.4	.9	22	15	0	15
11.0	3.4	.7	21	16	4	12
7.4	4.3	1.0	18	16	0	16

D.M.S. Mean = 7.5

T.O. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
8.8	3.9	1.1	13	14	0	14
9.9	5.4	1.1	26	16	1	15
9.1	3.8	.8	22	16	3	13
6.7	4.5	1.2	15	15	0	15
10.4	4.9	1.2	16	16	3	13
11.1	4.4	1.1	15	16	4	12
11.8	4.8	1.1	19	18	1	17

T.O. Mean = 9.9

I.T.A. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
6.6	4.2	.9	22	15	1	14
8.6	4.1	1.0	17	16	3	13
5.1	4.8	1.2	17	15	0	15
7.5	4.4	.9	24	15	1	14
10.2	4.3	.9	24	16	3	13
9.1	5.0	1.1	21	16	0	16
11.1	3.8	1.1	13	15	4	11

I.T.A. Mean = 8.3

Analysis of variance between group means: not significant

Table 12
(September)
Metropolitan Readiness Test 1964

Mean Total Raw Scores

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
D.M.S. Classes						
44.1	15.7	3.7	18	70	18	52
43.8	13.5	3.4	16	71	17	54
49.4	12.8	3.0	18	75	31	44
50.2	12.8	2.9	19	69	24	45
45.7	16.0	3.4	22	75	11	64
63.1	12.8	2.8	21	86	38	48
47.2	12.1	2.9	18	64	26	38
D.M.S. Mean = 49.1						
T.O. Classes						
51.2	13.3	3.7	13	74	32	42
52.7	19.2	3.8	26	88	10	78
53.6	10.2	2.2	22	70	30	40
47.3	21.5	5.6	15	75	12	63
52.5	14.8	3.7	16	81	31	50
57.5	15.1	3.9	15	83	33	50
62.6	14.3	3.3	19	82	36	46
T.O. Mean = 53.9						
I.T.A. Classes						
45.7	14.9	3.2	22	73	21	52
48.3	14.7	3.6	17	76	16	60
39.2	16.6	4.0	17	80	10	70
45.7	15.9	3.2	24	68	15	53
60.5	13.4	2.7	24	82	40	42
48.0	14.7	3.2	21	75	23	52
49.3	14.8	4.1	13	83	25	58
I.T.A. Mean = 48.1						

Analysis of variance between group means: not significant

Table 13
(September)
Detroit Word Recognition

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
D.M.S. Classes						
1.6	1.9	.5	18	7	0	7
1.8	3.7	.9	16	11	0	11
1.9	1.8	.4	18	6	0	6
1.7	2.4	.5	19	10	0	10
.3	1.1	.2	22	5	0	5
1.1	1.4	.3	21	5	0	5
1.0	1.2	.3	18	3	0	3
D.M.S. Mean = 1.3						
T.O. Classes						
1.5	1.5	.4	13	5	0	5
2.7	5.8	1.1	26	28	0	28
1.9	1.7	.4	22	6	0	6
1.7	3.1	.8	15	11	0	11
2.1	3.1	.8	16	11	0	11
1.9	3.6	.9	15	14	0	14
1.4	1.7	.4	19	6	0	6
T.O. Mean = 1.9						
I.T.A. Classes						
1.4	1.0	.2	22	4	0	4
.4	.8	.2	17	3	0	3
1.4	3.4	.8	17	14	0	14
2.0	1.9	.4	24	8	0	8
.9	1.0	.2	24	3	0	3
2.0	3.3	.7	21	10	0	10
.3	.5	.1	13	1	0	1
I.T.A. Mean = 1.2						

Analysis of variance between group means: Not significant

Table 14
(October)
Pintner-Cunnigham Raw Score

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
D M S Classes						
35.8	8.0	1.9	18	49	22	27
35.5	6.8	1.7	16	46	19	27
39.6	7.3	1.7	18	51	26	25
39.8	6.8	1.6	19	49	25	24
37.7	10.3	2.2	22	48	7	41
42.5	4.6	1.0	21	52	36	16
35.8	8.3	1.9	18	52	20	32
D.M.S. Mean = 38.1						
T.O. Classes						
37.9	6.4	1.8	13	47	24	23
41.3	8.8	1.8	25	52	19	33
40.7	5.5	1.2	22	49	30	19
38.8	11.8	3.1	15	50	18	32
36.7	7.8	2.0	16	49	23	26
39.3	9.7	2.5	15	52	13	39
44.2	6.0	1.4	19	51	25	26
T.O. Mean = 39.8						
I.T.A. Classes						
39.9	6.8	1.4	22	51	25	26
33.6	10.1	2.3	19	48	14	34
39.3	9.1	2.4	14	57	17	40
34.9	12.1	2.5	24	54	11	43
40.2	5.6	1.1	24	50	31	19
41.1	5.9	1.3	20	51	32	19
37.1	7.0	1.9	13	45	23	22
I.T.A. Mean: 38.0						

Analysis of variance between group means: not significant

Table 15

(October)
Pintner-Cunningham I.Q.

D.M.S Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
94.9	12.6	3.0	18	119	72	47
93.8	8.7	2.2	16	108	78	30
100.8	11.3	2.7	18	123	81	42
100.0	12.9	2.9	19	119	72	47
95.5	17.8	3.8	22	120	55	65
103.4	10.2	2.2	21	128	80	48
95.7	12.9	3.0	18	129	77	52

D.M.S. Mean = 97.7

T.O. Classes

97.5	10.3	2.8	13	112	75	37
104.4	15.2	3.0	25	125	69	56
104.7	15.2	3.2	22	144	82	62
100.5	18.0	4.7	15	125	70	55
97.7	13.5	3.4	16	117	74	43
98.4	19.0	4.9	15	124	53	71
105.8	13.0	3.0	19	126	66	60

T.O. Mean = 101.3

I.T.A. Classes

102.3	10.0	2.1	22	119	86	33
92.7	13.1	3.0	19	113	72	41
100.0	18.0	4.8	14	147	68	79
94.2	20.3	4.2	24	137	55	82
100.7	10.3	2.1	24	128	86	42
100.7	11.5	2.6	20	126	84	42
96.8	11.6	3.2	13	116	81	35

I.T.A. Mean = 98.2

Analysis of variance between group means: not significant

Table 16
(December)
Instant Words Recognition Test

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
9.9	7.2	1.8	17	24	2	22
16.4	5.4	1.4	14	24	7	17
15.8	5.1	1.3	16	23	4	19
18.8	4.5	1.1	16	24	8	16
18.0	4.9	1.2	18	24	6	18
17.2	6.4	1.5	19	24	6	18
14.4	6.1	1.5	16	24	5	19

D M S Mean = 15.8

T.O Classes

16.6	6.9	2.0	12	23	5	18
19.2	5.1	1.0	24	24	6	18
16.4	5.6	1.3	20	24	5	19
16.2	7.3	1.9	14	24	3	21
14.5	5.0	1.4	12	21	6	15
16.1	6.6	2.2	8	23	6	17
19.8	2.9	.7	19	24	14	10

T.O Mean = 17.0

I.T.A. Classes

15.5	5.6	1.2	22	21	1	20
14.6	6.4	1.5	17	24	3	21
13.0	6.6	1.9	12	23	3	20
18.0	5.6	1.3	20	24	8	16
20.4	3.6	.7	24	24	12	12
19.6	4.8	1.1	18	24	9	15
14.3	7.2	2.1	12	24	2	22

I T A Mean = 16.5

Analysis of variance between group means: not significant

Table 17
(May)
Stanford Word Reading-Number Correct

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
13.2	6.3	1.5	18	28	4	24
17.8	6.1	1.5	16	29	10	19
21.2	5.6	1.3	18	31	10	21
21.4	6.1	1.4	19	35	10	23
18.6	6.2	1.3	22	30	5	25
20.3	6.7	1.5	21	33	10	23
18.5	6.7	1.6	18	32	9	23

D.M.S. Mean = 18.7

T.O. Classes

21.5	6.6	1.8	13	31	8	23
22.1	6.7	1.3	25	34	7	27
20.9	7.0	1.5	22	35	10	25
19.2	8.9	2.3	15	35	6	29
16.0	8.0	2.0	16	34	3	31
20.1	7.5	1.9	15	32	6	26
22.3	5.0	1.1	19	32	13	19

T.O. Mean = 20.3

I.T.A. Classes

21.1	7.3	1.6	22	34	10	24
21.8	7.6	1.8	19	31	5	26
19.4	9.9	2.6	14	34	8	26
21.9	9.2	1.9	24	34	5	29
22.0	9.1	1.9	24	34	0	34
23.6	7.7	1.7	20	34	9	25
14.0	6.6	1.8	13	25	7	18

I.T.A. Mean = 20.5

Analysis of variance between group means: not significant

Table 18

(May)
Stanford Paragraph Meaning

Total Number Correct

D.M S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
11.7	7.7	1.8	18	34	1	33
16.9	7.9	2.0	16	28	6	22
22.1	9.0	2.1	18	35	5	30
20.7	11.0	2.5	19	37	1	36
15.5	7.6	1.6	22	30	2	28
19.6	10.3	2.2	21	35	4	31
14.4	8.0	1.9	18	38	2	36

D M S Mean = 17.3

T.O. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
23.5	8.0	2.2	13	35	6	29
22.9	7.5	1.5	25	36	6	30
21.2	8.3	1.8	22	37	8	29
17.1	12.3	3.2	15	38	2	36
17.3	8.0	2.0	16	37	10	27
19.4	9.3	2.4	15	32	0	32
21.7	8.1	1.9	19	37	8	29

T.O. Mean = 20.4

I.T.A. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
15.6	8.1	1.7	22	34	6	28
15.4	8.1	1.9	19	36	1	35
17.1	12.2	3.2	14	37	5	32
20.0	12.7	2.6	24	38	1	37
21.7	10.2	2.1	24	38	6	32
22.3	10.3	2.3	20	38	5	33
10.8	4.8	1.3	13	24	5	19

I.T.A. Mean = 17.6

Analysis of variance between group means: not significant

Table 19

(May)

Stanford Vocabulary Total Number Correct

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
D.M.S. Classes						
17.9	6.8	1.6	18	31	6	25
19.8	6.3	1.6	16	31	11	20
22.2	5.3	1.2	18	34	14	20
23.8	5.2	1.2	19	34	11	23
20.1	5.9	1.3	22	33	6	27
26.1	4.9	1.1	21	37	15	22
19.4	7.3	1.7	18	31	0	31
D.M.S. Mean = 21.2						
T.O. Classes						
21.9	5.4	1.5	13	31	14	17
25.6	7.6	1.5	25	37	10	27
23.4	7.0	1.5	22	34	8	26
20.9	8.2	2.1	15	35	8	27
19.3	6.9	1.7	16	35	9	26
22.1	4.9	1.3	15	29	14	15
28.1	4.5	1.0	19	38	19	19
T.O. Mean = 23.0						
I.T.A. Classes						
22.8	5.2	1.1	22	33	14	19
20.8	6.6	1.5	19	32	12	20
21.2	6.2	1.7	14	31	9	22
23.3	6.5	1.3	24	34	8	26
24.0	5.5	1.1	24	34	15	19
25.8	5.2	1.2	20	34	15	19
18.5	6.1	1.7	13	30	8	22
I.T.A. Mean = 22.3						

Analysis of variance between group means: not significant

Table 20
(May)
Stanford Spelling-Number Correct

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
D.M.S. Classes						
4.2	5.1	1.2	18	15	0	15
9.9	6.2	1.6	16	18	0	18
11.2	4.5	1.1	18	19	3	16
11.3	6.2	1.4	19	20	3	17
9.8	6.0	1.3	22	19	0	19
8.8	5.6	1.2	21	19	1	18
6.7	4.5	1.1	18	17	1	16
D.M.S. Mean = 8.8						
T.O. Classes						
11.8	4.3	1.2	13	20	4	16
13.8	5.4	1.1	25	26	3	23
11.9	5.3	1.1	22	19	3	16
8.8	6.3	1.6	15	19	1	18
8.1	4.7	1.2	16	20	1	19
10.8	5.8	1.5	15	19	1	18
11.9	4.3	1.0	19	20	6	14
T.O. Mean = 11.0						
I.T.A. Classes						
7.9	2.7	.6	22	13	1	12
7.3	4.0	.9	19	17	0	17
5.4	5.0	1.3	14	15	0	15
7.9	4.4	.9	24	18	1	17
10.0	4.6	.9	24	19	4	15
8.7	5.3	1.2	20	18	0	18
4.5	3.5	1.0	13	8	0	8
I.T.A. Mean = 7.4						

Analysis of variance of group means: Significant at .05 level

Table 2[illegible]
(May)
Stanford Word Study

Mean	Standard Deviation	Standard error of the mean	Sample Size	Maximum	Minimum	Range
D.M.S. Classes						
25.6	9.8	2.3	18	42	6	36
35.5	9.1	2.3	16	50	20	30
35.7	7.3	1.7	18	44	21	23
39.3	9.5	2.2	19	54	22	32
33.6	9.5	2.0	22	48	14	34
38.1	10.8	2.4	21	51	11	40
31.3	9.8	2.3	18	48	16	32
D.M.S. Mean = 34.2						
T.O. Classes						
39.8	9.1	2.5	13	52	29	23
37.2	10.6	2.1	25	54	16	38
36.7	9.1	1.9	22	55	22	33
28.1	14.3	3.7	15	52	0	52
28.4	10.0	2.5	16	51	13	38
36.5	7.9	2.0	15	48	23	25
37.5	8.6	2.0	19	54	20	34
T.O. Mean = 34.8						
I.T.A. Classes						
36.5	8.3	1.8	22	47	22	25
30.2	10.1	2.3	19	48	15	33
33.8	10.8	2.9	14	50	19	31
36.0	13.0	2.6	24	55	7	48
38.8	8.1	1.7	24	51	21	30
40.2	8.7	1.9	20	52	20	32
30.2	7.4	2.1	13	42	21	21
I.T.A. Mean= 35.1						

Analysis of variance between group means: not significant

Table 22
(May)
Detroit Word Recognition

Mean Raw Score	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
D.M.S. Classes						
9.8	9.4	2.2	18	33	0	33
20.7	9.0	2.2	16	36	4	32
22.2	6.6	1.5	18	30	9	21
23.8	7.2	1.7	19	38	9	29
15.6	8.2	1.7	22	34	2	32
27.1	9.4	2.1	21	40	8	32
18.2	7.9	1.9	18	30	0	30
D.M.S. Mean = 19.6						
T.O. Classes						
31.0	6.1	1.7	13	40	21	19
25.1	9.2	1.8	25	40	6	34
25.8	6.7	1.4	22	40	13	27
18.7	10.3	2.7	15	33	3	30
20.4	9.3	2.3	16	35	4	31
18.9	7.4	1.9	15	29	4	25
28.3	7.8	1.8	19	38	11	27
T.O. Mean = 24.3						
I.T.A. Classes						
17.4	8.1	1.7	22	32	0	32
15.2	7.5	1.7	19	27	1	26
16.2	12.1	3.2	14	40	1	39
18.5	9.6	2.0	24	34	5	29
26.3	9.7	2.0	24	40	5	35
25.1	11.4	2.6	20	40	0	40
13.7	9.3	2.6	13	28	1	27
I.T.A. Mean = 18.9						

Table 23
Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	--	.47	.31	.48	.38	.42	.22	.43	.16	.30	.33	.50	.33	.44	.51	.28
2. D. M. Phonemes	.47	--	.61	.36	.72	.73	.35	.60	.53	.53	.48	.69	.31	.48	.58	.51
3. D. M. Total	.31	.61	--	.26	.52	.80	.33	.36	.33	.09	.21	.40	.29	.15	.45	.39
4. D. M. Learning Rate	.48	.36	.26	--	.27	.45	.08	.60	.51	.35	.60	.57	.48	.48	.40	.52
5. Met. Word	.38	.72	.52	.27	--	.66	.41	.36	.30	.43	.24	.56	.28	.39	.45	.41
6. Met. Total	.42	.73	.80	.45	.66	--	.41	.61	.56	.32	.48	.62	.50	.41	.53	.65
7. Teacher Rating	.22	.35	.33	.08	.41	.41	--	.36	.35	.63	.48	.59	.51	.49	.70	.52
8. P. C. Raw Score	.43	.60	.36	.60	.36	.61	.36	--	.94	.47	.59	.81	.53	.60	.55	.65
9. P.C.I.Q.	.16	.53	.33	.51	.30	.56	.35	.94	--	.45	.57	.75	.53	.49	.45	.62
10.Stan. Word Meaning	.30	.53	.09	.35	.43	.32	.63	.47	.45	--	.81	.80	.64	.78	.75	.67
11.Stan. Voc.	.33	.48	.21	.60	.24	.48	.48	.59	.57	.81	--	.78	.83	.80	.73	.88
12. Stan. P.	.50	.69	.40	.57	.56	.62	.59	.81	.75	.80	.78	--	.62	.77	.77	.75
13.Stan. Spelling	.33	.31	.29	.48	.28	.50	.51	.53	.53	.65	.83	.62	--	.67	.72	.78
14.Stan. Word Study	.44	.48	.16	.48	.39	.41	.49	.60	.49	.78	.80	.77	.67	--	.76	.78
15.Instant Words	.51	.58	.45	.40	.45	.53	.70	.55	.45	.75	.73	.77	.72	.76	--	.72
16.Detroit	.28	.51	.37	.52	.41	.65	.52	.65	.62	.67	.88	.75	.78	.78	.72	--

Table 24

Age and Sex Grouping of Stanford Paragraph Meaning Reading Test - Mean Raw Scores

GROUPS	DMS	TO	ITA	All Method
		BOYS		
Youngest Boys	16.5	22.8	16.1	18.5
Middle Boys	16.0	16.4	20.1	17.5
Oldest Boys	14.8	16.9	13.8	15.2
All Boys	15.8	18.7	16.7	17.0
		GIRLS		
Youngest Girls	16.8	20.9	20.0	19.2
Middle Girls	19.6	22.8	17.3	19.9
Oldest Girls	20.6	22.9	22.4	22.0
All Girls	19.0	22.2	19.9	20.4
		BOYS and GIRLS		
All Youngest	16.7	21.8	18.0	18.8
All Middle	12.8	19.6	18.7	18.7
All Oldest	17.8	19.9	18.1	18.6
All Children	17.4	20.4	18.3	

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Analysis of Variance

Source	D.F.	S.S.	M.S.	F	Significance
Total	387				
Teaching Method	2	29.712	14.856	3.66	.05
Sex	1	49.392	49.392	12.15	.01
Age	2	.248	.124		none
Method by Sex	2	.048	.024		none
Method by Age	4	7.532	1.883		none
Sex by Age	2	29.101	14.550	3.58	.05
Method by Sex by Age	4	3.096	.774		none
Error	370	1503.837	4.064		

Table 25

IQ and Sex Grouping of Stanford Paragrph Meaning Reading Test - Mean Raw Scores

GROUPS	DMS	TO	ITA	All Method
BOYS				
Dullest Boys	10.5	15.3	11.3	12.4
Average Boys	17.6	20.9	16.6	18.4
Brightest Boys	19.7	21.9	23.2	21.6
All Boys	15.9	19.4	17.0	17.4
GIRLS				
Dullest Girls	16.3	11.6	11.9	13.3
Average	17.4	19.8	17.8	18.3
Brightest Girls	22.0	25.1	25.3	24.1
All Girls	18.5	18.8	18.3	18.5
BOYS and GIRLS				
All Dullest	13.4	13.5	11.6	
All Average	17.5	20.4	17.2	
All Highest	20.8	23.5	24.3	

……

Analysis of Variance

Source	D.F.	S.S.	M.S.	F	Significance
Total	390				
Teaching Method	2	10.587	5.293		none
Sex	1	5.270	5.270		none
IQ	2	302.348	151.174	53.2	.01
Method by Sex	2	8.434	4.217		none
Method by IQ	4	17.590	4.398		none
Sex by IQ	2	5.565	2.732		none
Method by Sex by IQ	4	16.185	4.046		none
Error	372	991.120	2.395		

Table 26

Oral Reading Tests

Mean Scores of a Sub-Sample of the Population after Instruction on (N=111)

	D.M.S.	T.O.	I.T.A.
Gilmore Accuracy (Accuracy Grade Level Score)	2.5	3.1	2.7
Gilmore Rate (Words per minute)	45.9	58.4	44.6
Rate in grade level	1.5	2.5	1.5
Fry Phonetic Words (Number of words read)	4.6	7.9	10.8*
Gates Word Pronunciation (Number of Words Read)	10.0	12.7	14.0

*Indicates Significance at .01 level

Table 27

Mean Scores of a Sub-Sample of the Population After Instruction on a Writing Sample (N= 109)

	D.M.S.	T.O.	I.T.A.
Writing Mechanics: (Ratio of correct usage of punctuation capitalization and indentation to number of times correct usage was required. Ratio is converted to as percent of accuracy)	55.1	61.0	33.7**
Spelling : (Ratio of total words spelled correctly to total number of words used. Ratio is converted to a percent of accuracy)	12.1**	20.5	18.7
Total Number of Words Used	17.9	25.0	43.8***

**Indicates significance at .05 level

*** Indicates significance at .01 level

Table 28

Mean Age of Children

Age in Months

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
76.3	3.2	.8	18	82	72	10
76.1	3.9	1.0	16	81	70	11
76.1	3.3	.8	18	82	71	11
77.5	3.6	.8	19	83	71	12
79.0	5.7	1.2	22	93	71	22
78.2	5.3	1.2	21	95	70	25
75.7	4.3	1.0	18	88	70	18

D.M.S. Mean = 77.0

T.O. Classes

76.4	3.8	1.1	12	81	71	10
76.9	4.4	.9	26	87	70	17
75.2	4.2	.9	22	83	69	14
75.5	3.5	.9	15	81	71	10
74.8	3.6	.9	16	82	70	12
78.5	4.2	1.1	15	86	72	14
78.9	4.7	1.1	19	89	71	18

T.O.Mean = 76.6

I.T.A. Classes

74.4	4.3	.9	22	81	64	17
75.9	4.2	1.0	16	82	70	12
76.5	3.6	.9	17	82	71	11
76.7	3.6	.7	24	82	71	11
76.8	3.6	.7	24	82	71	11
77.8	3.6	.8	21	86	72	14
75.8	4.9	1.4	13	88	70	18

I.T.A. Mean = 76.2

Analysis of variance between group means: not significant

Table 29

Age of Teacher in Years

	Teachers using D.M.S. method	Teachers using T. O. method	Teachers using I.T.A. method
	23	30	47
	51	31	32
	37	27	60
	23	24	23
	55	37	49
	28	29	44
	34	39	23
Mean Age for each method group	35.9 years	31.0 years	39.7 years

Mean age for all teachers - 35.5 years
N=21

Table 30

Highest Degree Held by Teacher

Description of Degree	Teachers using D.M.S. method	Teachers using T.O. method	Teachers using I.T.A. method	Total
Less than a Bachelor's Degree	1	0	1	2
Bachelor's Degree	3	4	2	9
More than a Bachelor's but less than a Master's	2	1	2	5
Master"s Degree	1	2	1	4
Master's Degree plus additional graduate work, but does not hold a more advanced degree	0	0	1	1
Specialist's of Professional degree (less than Doctor's), but requiring approximately twice as much educational work as a Master's	0	0	0	0
Doctor's Degree	0	0	0	0

Table 31

Type of Teaching Certificate Held by Teacher

Description of Certificate	Teachers using D.M.S. method	Teachers using T.O. method	Teachers using I.T.A. method	Total
Teacher is uncertified	0	0	0	0
Lowest sub-standard certificate issued by state of residence (e.g. temporary permit)	0	0	0	0
Highest level sub-standard certificate if state issues two or more levels of such	0	1	1	2
Certificate of "standard bype" i.e. type held by most first grade teachers in the state	7	6	5	18
Certificate indicative of higher level than "standard type"	0	0	1	1

N=21

Table 32

Total Number of Years of Teaching Experience
(The total number of years teaching experience is exclusive of current year)

	Teachers using D.M.S. method	Teachers using T.O. method	Teachers using I.T.A. method
	1	7	3
	20	1	7
	12	4	35
	1	2	1
	22	12	15
	6	8	13
	7	8	1
Mean number of years for each method group	9.9	6.0	10.7

N=21

Mean number of years for all teachers = 8.9

Table 33

Total Number of Years of First Grade Teaching Experience
(The total number of years of first grade teaching experience is exclusive of current year.)

Teachers using D.M.S. Method	Teachers using T.O. Method	Teachers using I.T.A. Method
1	7	0
6	1	7
2	4	32
1	2	1
8	0	11
6	5	2
2	2	0
Mean number of years for each method group 3.7	3.0	7.6

Mean number of years for all teachers = 4.8
N = 21

Table 34

Marital Status of Teacher

Status	Teachers using D.M.S. method	Teachers using T.O. method	Teachers using I.T.A. method	Total
Single	2	4	2	8
Married (currently)	4	2	5	11
Widowed or divorced (Currently unmarried)	1	1	0	2

N = 21

Table 35

Number of Children the Teacher Has

Teachers using D.M.S. method	Teachers using T.O. method	Teachers using I.T.A. method
0	0	2
2	2	0
2	0	0
0	0	0
1	1	0
0	0	2
1	3	1
Mean number of children for each method group .86	.86	.71

Mean number of children for all teachers = .81

N = 21

Table 36

Teacher Rating of Overall Competence

D.M.S.	T.O.	I.T.A.
3	3	3
3	4	4
1	4	3
2	3	4
2	2	4
2	3	1
4	2	1
Mean = 2.4	3.0	2.9

Teacher rating of overall competence

Scale:

0 Incompetent
1 Poor
2 Adequate
3 Good
4 Excellent

Table 37

Teacher Rating - Class Structure

	DMS	TO	ITA
	3	4	4
	3	4	4
	1	3	3
	3	2	2
	3	4	4
	3	3	4
	4	4	1
Mean Average Rating of Class Structure for each Method	2.9	3.4	3.1

Scale:

0. Teacher is generally vague and directions seem confusing to the children.
1. There is generally more vagueness than clarity and more looseness than structure.
3. Teacher is generally well organized and clear in assigning tasks---directions and expectations clear, but not spelled out as below.
4. Teacher structures for the children---gives detailed clear directions, and expectations are clearly spelled out in detail.

Table 38

Teacher Rating - Extent of Class Participation

	DMS	TO	ITA
	3	3	4
	3	3	2
	4	1	2
	1	2	3
	2	3	4
	3	3	2
	3	3	3
Mean Average Rating of Class Participation for Each Method	2.7	2.6	2.9

Scale:

0 Class is generally unresponsive with only a very few children actually participating.

1 Participation highly variable, but tends to be low quite often.

2 Teacher has a group of children who are participating well most of the time, but a fairly large group who are not consistently with the teacher.

3 Moderately high participation on part of most children most of the time but with some variability.

4 High participation on part of most children at all times.

Table 39

Teacher Participation - Awareness of and Attention Paid to Individual Needs of Pulils

	DMS	TO	ITA
	3	3	3
	4	3	4
	1	2	3
	2	1	2
	3	2	3
	2	3	3
	4	4	2
Mean Average Rating of Awareness for Each Method	2.7	2.6	2.9

Scale:

0 Total lack of awareness on the part of the teacher to the individual instruction needs of the pupils.

1 Limited awareness of and attention paid to individual needs of pupils.

2 There is moderate awareness and adjustment of instruction by the teacher based upon the needs of individual pupils in the class.

3 Teacher is generally aware of pupil needs and attempts to make the necessary instructional adjustment in light of their needs.

4 Teacher exceptionally aware of pupil needs with effective adjustment of instruction in light of these needs.

Table 40

Teacher Attendance--Total Number of Days Absent

Teachers Using DMS Method	Teachers Using TO Method	Teachers Using ITA Method
12	2	0
2	3	7
3	2	13
5	6	10
2	6	6
2	2	7
0	5	6
3.7 days	3.7 days	6.7 days

Mean number of days absent for each method

Table 41

Community Education Level

Mean Number of Years Education Completed by adults living within the School's Community	DMS Classes	TO Classes	ITA Classes
10 years	4	0	4
12 years	1	5	2
13 years	22	2	1
Mean Years Education For Each Method Group	11.1	12.3	11.0

Table 42

Community Income Level

Median Income in Community by Family and unrelated adults	DMS Classes	TO Classes	ITA Classes
\$5001 - \$6000	0	0	0
\$6001 - \$7000	4	2	4
\$7001 - \$8000	3	3	0
\$8001 - \$9000	0	2	1

Table 43

Population of the Community

Population of the Community in which the School is located	DMS Classes	TO Classes	ITA Classes
2501 to 10,000	5	3	6
5001 to 10,000	2	4	1

All the schools were in a suburban type of community.

Table 44

Pupil Attendance - Total Number of Days Absent

D.M.S. Classes

Mean	Standard Deviation	Standard Error of the Mean	Sample Size	Maximum	Minimum	Range
10.6	8.2	1.9	18	33	1	32
10.3	7.2	1.8	16	26	0	26
12.7	10.0	2.3	18	42	1	41
10.6	7.3	1.7	19	30	1	29
8.0	6.5	1.4	22	24	0	24
9.5	6.7	1.5	21	27	0	27
10.2	5.2	1.2	18	21	3	18

D.M.S. Mean = 10.3

T.O. Classes

9.8	6.8	1.9	13	20	0	20
9.7	5.8	1.2	25	29	2	27
10.0	5.2	1.1	22	21	1	20
11.5	9.0	2.3	15	32	0	32
11.5	6.7	1.7	16	28	4	24
12.9	6.9	1.8	15	27	2	25
5.8	4.9	1.1	19	18	0	18

T.O. Mean = 10.2

I.T.A. Classes

9.1	7.9	1.7	22	30	1	29
9.4	5.7	1.3	19	27	2	25
12.1	5.4	1.5	14	21	2	19
.3	1.0	.2	24	5	0	5
3.0	6.9	1.4	24	35	1	34
10.1	8.4	1.9	20	30	0	30
12.8	7.8	2.2	13	30	3	27

I.T.A. Mean = 8.8

Analysis of variance between group means: not significant

Table 45

Class Size

D.M.S.	T.O.	I.T.A.
24	19	28
25	28	28
25	25	23
21	21	21
27	27	25
22	23	28
24	21	16
Mean		
24.0	23.4	23.9

Table 46

Sample Copy of the Fry Phonetically Regular Words Oral Reading Test

Child's Name________________________Date_________
School______________________Room_____Code Number________
Examiner_______________Number of words read correctly_____

1. nap	16. walk
2. pen	17. haul
3. hid	18. jaw
4. job	19. soil
5. rug	20. joy
6. shade	21. frown
7. drive	22. trout
8. joke	23. term
9. mule	24. curl
10. plain	25. birch
11. hay	26. rare
12. keen	27. star
13. least	28. porch
14. loan	29. smooth
15. show	30 shook

Directions: Have pupil read words from one copy while examiner makes another copy. Do not give pupil a second chance but accept immediate self-correction. Let every student try the whole first column. If he gets two words correct from word number six on, let him try the whole second column.

Level 8

BIBLIOGRAPHY

Who said dat

Downing, John "Experiments with Pitman's Initial Teaching in the British Schools", Reading As An Intellectual Activity, International Reading Assn. Proceedings, Volume 8, Scholastic Magazines, New York 1963.

Downing, John The Initial Teaching Alphabet, Macmillan Company, N.Y., 1964.

Durrell, Donald D., "First Grade Reading Success Study: A Summary", Journal of Education, 140:2-6, February 1958.

Fry, Edward B. "A Diacritical Marking System to Aid Beginning Reading Instruction" Elementary English May 1964

Fry, Edward, "Developing a Word List for Remedial Reading", Elementary English, November 1957.

Gilmore, John V. Gilmore Oral Reading Test, Harcourt, Brace & World, New York, 1952.

Gray, Wm. S. "The Teaching of Reading", Encyclopedia of Educational Research, 3rd Edition, Chester Harris, Editor, Macmillan Company, New York 1960.

Gunderson, Doris V., Research in Reading Readiness, U.S. Dept. of Health, Education, & Welfare Bulletin No. 8 1964.

Gunderson, Doris V. Research in Reading at the Primary Level, U.S. Dept. of Health, Education, & Welfare Bulletin No. 42, 1963.

Harrison, Maurice, The Story of the Initial Teaching Alphabet, Pitman Publishing Corp. New York, 1964.

Hildreth, Gertrude, Nellie Griffiths, and Mary McGauvran, Metropolitan Readiness Tests, Harcourt, Brace and World, Inc., New York, 1964.

Kelley, Truman L., Richard Madden, Eric Gardner, and Herbert Rudman, Stanford Achievement Test Primary I Battery, Form W, Harcourt, Brace and World, Inc., New York, 1964.

Mazurkiewicz, Albert J. "Lehigh-Bethlehem ITA Study Interim Reports 6" The Journal of the Reading Specialist Sept. 1964.

Mazurkiewicz, Albert J. "The Lehigh University-Bethlehem Schools ITA Study Interim Report 9" The Journal of the Reading Specialist Oct. 1965.

Murphy, Helen, and Donald Durrell, Murphy-Durrell Diagnostic Reading Readiness Test rev. ed., Harcourt, Brace and World. N.Y., 1964.

Oglesby, Eliza F., Detroit Word Recognition Test, Harcourt, Brace & World, New York, 1953.

Pintner, Rudolph, Bess Cunningham, and Walter Durost, Pintner-Cunningham Primary Test, Form A, Harcourt, Brace & World, New York, 1964.

Ploghoft, Milton H. "Do Reading Readiness Workbooks Promote Readiness?' Elementary English, 36:424-425. October 1959.

APPENDIX - Readiness

Level 9

What fo Dat Readiness Stuff?

The following section is a paper presented at the American Educational Research Association December, 1965. It is included here because it provides a rational for our non-use of reading readiness materials for our first grades. There is a remote possibility that this by-product of our research might provide some insights to other researchers or possibly be used as a policy in some school districts.

ARE READING READINESS MATERIALS NECESSARY IN THE FIRST GRADE?*

By Edward Fry
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> "...in a changing climate of opinion about the optimum time for beginning reading or the study of certain types of reading materials, the problem of reading readiness should be considered." David Russell and Henry Fea in the Handbook of Research on Teaching, 1963.

Since approximately four million children enter first grade every year, and a majority of them are given one or more reading readiness workbooks costing about 80 cents each, the national expenditure for reading readiness workbooks might be something in the neighborhood of $3,000,000 to $5,000,000. For this rather large expenditure, the cost concious education industry might be expected to get some results for their money, but this is highly doubtful.

The author, who is quite aware of the discrepancy between textbook salesmans' claims for the necessity of reading readiness workbooks and the rather equivocal findings in the literature, had the opportunity through a U.S.Office of Education grant to say, "There shall be no reading readiness workbooks used in these particular first grades". Teachers who asked what to start with were told to use the regular pre-primers. Not only were teachers not allowed to use reading readiness workbooks, but reading readiness tests were also denied them. Grouping at first was in 3 randomly assigned groups; each group was taught reading, but after several weeks teachers regrouped children into fast, average, and slow groups based on success in actual lessons.

However, even experimenters sometimes wonder if they did the correct thing by flying in the face of tradition, and the result is this little study which surveyed some of the literature and compared the results of four experimental first grade classrooms with four first grade classrooms in the same small school district

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*This study is a minor part of U.S. Office of Education Grant 2745, "First Grade Reading Instruction Using A Diacritical Marking System, The Initial Teaching Alphabet, and a Basic Reading Series"

(Paper presented at American Educational Research Association
February 1965)

who were not in the project. A survey was also made of all 25 first grade teachers in the district concerning their opinion on the necessity of continued use of readiness books in first grade.

Survey of the Literature

The investigator was unable to find any studies which strongly favored the use of reading readiness materials. Perhaps the best was Sr.Nila (1958) who had a readiness class of 33 who were two tenths of a year ahead of a non-readiness class at the end of first grade. As opposed to this Durrell (1958) and others who studied 2000 Boston 1st graders found that children with superior backgrounds made better progress when readiness materials were omitted. Waiting until the end of 2nd and 3rd grade to compare a readiness and a non-readiness class did not help much either as reported by Bradley (1956) who found no differences in reading achievement after such delayed measurement.

Nor do the use of reading readiness workbooks in kindergarten help much either. Ploghoft (1959), Collins (1960), and Blakely and Shadle (1961) all found no differences on reading readiness tests when their workbook classes were compared with non-workbook classes.

Finally, Docter (1960,1963) compared workbook and non-workbook classes and concluded that non-workbook materials were superior for the purpose of initiating the reading program in the first grade.

Procedure

The Metropolitan Reading Readiness Test was administered to all pupils in September of first grade. The mean raw score for the 78 pupils in the readiness group was 53.8 and the mean raw score for the 75 non-readiness pupils was 50.2. The difference was not significant at the .05 level.

All children in both groups had had a full year of kindergarten for half a day. No reading instruction is given in kindergarten and no published reading readiness materials were used.

The pupils in the readiness group were all given the reading readiness workbook Before We Read published by Scott Foresman

Company. If teachers felt that some students needed more readiness they were given We Read Pictures. A small portion were still not judged ready to read so they were given We Read More Pictures. As the titles explain, the children who are instructed in these books are not taught to read any words.

No children in the non-readiness group were given any reading readiness published materials, nor was any time allotted to readiness activities. This is not to say that teachers were forbidden to engage in informal classroom activities that many might construe as reading readiness, but the teachers were told to start reading instruction for all children immediately after initial readiness testing was completed.

Reading instruction in the readiness group consisted of pre-primers and primers in the Scott Foresman Series and reading instruction in the non-readiness group consisted of pre-primers and primers in the Allyn and Bacon Series. Despite the different stories the two series are structurally similar. Each has about the same vocabulary load (number of different words introduced in corresponding books) and a similar delayed introduction of phonic skills (neither series teaches any vowel sounds in first grade.)

TABLE 1

Comparison of Total New Words Introduced in Two First Grade Reading Series

	Basal Reading Series	
Books	Scott Foresman	Allyn & Bacon
1st Pre primer	18	17
2nd Pre primer	22	21
3rd Pre primer	32	20
Primer	101	90

All children and teachers were located in the public schools in a small school district of central New Jersey. This is a suburban middle class community.

Results

In mid-December the Instant Word Recognition Test was used for all pupils. This is a research instrument consisting of 24 five choice items. The examiner reads a word aloud and uses it in a sentence while the child marks the correct word. The words were selected from the Instant Words, a hign frequency vocabulary broken into groups of the 25 most common words, the 25 next most common words, etc. (Fry 1957) Two items were taken from each group of 25 words. Pupils in the readiness group were able to correctly respond to a mean of 10.2 items while pupils in the non-readiness group were able to respond to a mean of 12.0 items. The difference between the two groups was significant at the .01 level when a one way analysis of covariance was used (correcting for initial differences in the readiness test scores of the two groups) or significant at the .05 level when readiness test scores are not taken into account.

Teachers in the non-readiness classes were definitely ahead in their progress through reading books as can be seen by Table 3. All teachers used three reading groups. In the non-readiness classes all but two low groups were in the primer and these two were in the 3rd pre-primer. In the readiness classes there were only 3 groups in the primer, 4 groups were in the 3rd pre primer, 4 groups were in the 2nd pre-primer, and one was in the 1st pre-primer.

Twenty five teachers comprising all the first grade teachers in the district where the study took place were asked, "Do you feel that commercially prepared reading readiness materials (workbooks entitled Before We Read, We Read Pictures, and We Read More Pictures) are necessary?" This was done before results of this study were known. For their top reading groups 3 answered Yes and 22 answered No; for their middle groups 7 answered Yes and 18 answered No; for their low groups 15 answered Yes and 10 answered No.

The correlation between scores on the Metropolitan Reading Readiness Test and reading achievement as measured by the Instant Word Recognition Test was .56. It is interesting that Gray, (1960)

TABLE 2

COMPARISON OF READINESS AND NON-READINESS READING GROUPS ON THE METROPOLITAN READING READINESS TEST AND INSTANT WORD RECOGNITION TEST

Tests	Readiness Group (N=78)	Non-Readiness Group (N=75)	Significance of Differences
Metropolitan Reading Readiness Test	Mean 53.8 S.D. 16.3	50.2 15.9	Not Signif.
Instant Word Test	Mean 10.2 S.D. 5.56	12.0 5.9	P = $<$.01*

*Analysis of variance gave an F of 4.10 significant at the .05 level and analysis of covariance gave an F of 11.40 significant at the .01 level.

TABLE 3

PROGRESS THROGH READING SERIES BY MID-DECEMBER OF READINESS AND NON-READINESS GROUPS

Teacher	Top Group	Mid-Group	Low Group
READINESS GROUP			
N	3rd Pre-primer	2nd Pre-primer	2nd Pre-primer
O	Primer	Primer	2nd Pre-primer
P	3rd Pre-primer	3rd Pre-primer	1st Pre-primer
Y	Primer	3rd Pre-primer	2nd Pre-primer
NON-READINESS GROUP			
E	Primer	Primer	3rd Pre-primer
F	Primer	Primer	3rd Pre-primer
G	Primer	Primer	Primer
H	Primer	Primer	Primer

reporting a study by Senour done in 1937, comparing the Metropolitan Readiness Test and reading achievement, found a correlation of .54. That's real progress in 27 years.

Conclusions

While this study may not sound the death knell for reading readiness workbooks, it is considerably less than a recommendation.

The fact that the non-readiness group scored significantly better on the mid-December reading test is not a good omen for readiness workbooks. Results at the end of first and second grades might be more meaningful however. Bradley's study doesn't give us much hope of eventual superiority for those who had the use of readiness workbooks. These results plus the other studies found in the literature indicate that the experimenter at least wasn't completely wrong in decreeing that, "There shall be no reading readiness in first grade". School superintendents who have to justify book expenditures to school boards might expect to have an increasingly difficult time in asking for more money when there is so little proof that some of their money is going for worthwhile materials now.

Undoubtedly, part of the reason that the non-readiness group came out ahead was simply that more time was spent teaching reading. Hopefully, it won't come as too much of a surprise to many educators that children learn to read if they are taught to read.

It is also an interesting comment on our education system that even though 22 out of 25 teachers did not think readiness workbooks were necessary for their top groups, all children not in the experimental group were requires to use them. The split in opinion about the necessity of readiness workbooks for the low group may be partially due to the fact that some children don't learn to read very rapidly no matter what you do. As one teacher commented, "It might be just as well to start these children reading slowly without readiness workbooks". Another teacher noted that children who were given only picture books in the first grade began to show less interest in words put on the board than they did when they entered first grade.

Finally the superintendent might be able to save a few more taxpayer dollars by not ordering reading readiness tests. A correlation of .56 might tell us something about a large group, but as a help for the teacher placing an individual child into a top, middle, or low group, readiness tests are not very useful. It is possible that correlations between readiness tests and reading achievement might be getting a curious type of feedback which goes something like this: the readiness test says Johnny isn't ready - so he is not taught reading (is placed in a "readiness group") - so at the end of the year he can't read very well - so the readiness test was right. We found that the procedure of randomly grouping children, teaching them reading from a pre-primer for two weeks, then having the teacher place them into top, middle, and low groups, to be quite satisfactory. At least no child was denied reading instruction based on a kindergarten or first grade teacher's pre-reading opinion, or on the results of a formal test that gives questionable scores.

DAT'Z ALL FOLKS !

DERE AIN'T NO MO.